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The San Francisco AIDS Oral History Series

THE AIDS EPIDEMIC IN SAN FRANCISCO: THE MEDICAL RESPONSE, 1981-1984

Volume VI

Deborah Greenspan, BDS, ScD	ORAL MANIFESTATIONS OF AIDS
John S. Greenspan, BDS, PhD, FRCPath	AIDS SPECIMEN BANK, UCSF

With an Introduction by
James Chin, M.D., M.P.H.

Interviews Conducted by
Sally Smith Hughes, Ph.D.
in 1994

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To cite the volume: "The AIDS Epidemic in San Francisco: The Medical Response, 1981-1984, Volume VI," an oral history conducted in 1994, Regional Oral History Office, The Bancroft Library, University of California, Berkeley, 1998.

To cite an individual interview: [ex.] Deborah Greenspan, BDS, ScD, "Oral Manifestations of AIDS," an oral history conducted in 1994 by Sally Smith Hughes, Ph.D., in "The AIDS Epidemic in San Francisco: The Medical Response, 1981-1984, Volume VI," Regional Oral History Office, The Bancroft Library, University of California, Berkeley, 1998.

Copy no. 1

Cataloging information

THE AIDS EPIDEMIC IN SAN FRANCISCO: THE MEDICAL RESPONSE, 1981-1984, VOLUME VI, 1998, xix, 254pp.

Deborah Greenspan (b. 1940), clinical professor of oral medicine and stomatology, School of Dentistry, University of California, San Francisco; education and early career; early AIDS cases in dental school; research on and AIDS significance of hairy leukoplakia; infection control in dentistry; memories of AIDS patients; medicine and dentistry; UCSF administration and AIDS; UCSF Oral AIDS Center; oral AIDS programs elsewhere; San Francisco Model of AIDS Care; demography of the epidemic; burnout; personal and professional impacts of the epidemic; international conferences on AIDS.
John S. Greenspan (b. 1938), professor of oral pathology and stomatology, School of Dentistry, University of California (1976-present); education and early career; encountering AIDS epidemic; research on AIDS-associated lymphoma; M. Antony Epstein and Yvonne Barr and Epstein-Barr virus; infection control in dentistry; AIDS case definition and risk groups; Walter Reed AIDS staging system; UCSF Kaposi's Sarcoma Clinic and Study Group; organizing and running the UCSF AIDS Specimen Bank and committee; tensions and turf battles; AIDS patients at the UCSF Oral Medicine Clinic; American Cancer Society grant to Kaposi's Sarcoma Clinic; UCSF attitude to AIDS; Willie Brown and State of California funds for AIDS; UCSF AIDS Clinical Research Center; hairy leukoplakia; dentistry and AIDS epidemic; UCSF dentistry and medicine; UCSF Oral AIDS Center; San Francisco Model of AIDS care.

Introduction by James Chin, M.D., M.P.H., Clinical Professor of Epidemiology, School of Public Health, University of California, Berkeley.

Interviews conducted in 1994 by Sally Smith Hughes, Ph.D. for the San Francisco AIDS Oral History Series, Regional Oral History Office, The Bancroft Library, University of California, Berkeley.

ACKNOWLEDGEMENTS

The Regional Oral History Office wishes to express deep gratitude to Evelyne and David Lennette of Virolab, Inc., for their financial support of this project, incisive conceptual contributions, and sustaining interest and enthusiasm.

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PREFACE--by David A. Lennette, Ph.D., and Evelyne T. Lennette, Ph.D.

As two young medical virologists working in Pennsylvania, we experienced first hand some of the excitement of medical detective work. We had our first glimpse of how personalities can shape the course and outcome of events during the swine influenza and Legionnaires' disease outbreaks.

On our return to California, we were soon embroiled in another much more frightening epidemic. In 1981, our laboratory began receiving samples for virologic testing from many of the early San Francisco AIDS patients--whose names are now recorded in Randy Shilts' book *And the Band Played On*. Our previous experience with the legionellosis outbreak had primed us for this new mystery disease. While the medical and scientific communities were hotly debating and coping with various issues during the following three years, we were already subconsciously framing the developments in an historical point of view. In San Francisco, dedicated junior physicians and researchers banded together to pool resources and knowledge out of necessity, and in doing so, organized part of the local medical community in a very unusual way. Once again, we were struck by how the personalities of each of these individuals shaped the course of events. Even before HIV was discovered, we knew we were witnessing a new page in the history of science and medicine.

The swine flu and legionellosis outbreaks were both very local and short lived. We now speak of them in the past tense. The AIDS epidemic, sadly, is still spreading unimpeded in much of the world. We know that it will be with us for a long time and that it is very unlikely that either of us will live long enough to read the closing chapter on AIDS.

Future generations will some day want to know how it all got started. The existing scientific reports and publications provide depersonalized records of some of the events, while newspaper articles and books give glimpses as summarized by observers. What are missing are the participants' own accounts and perspectives.

It is now more than a dozen years after the recognition of the AIDS epidemic in the United States. So much has happened and changed--already, some of the participants in early events have retired, records are being discarded and destroyed, and memories of those days are beginning to fade. We felt their oral histories had to be recorded without delay.

We had previously sponsored oral histories on virology with Dr. Edwin H. Lennette, David's father, and Dr. Harald N. Johnson, and were familiar with the methods and work of the Regional Oral History Office. We met to talk over the recording of the AIDS epidemic with Willa Baum, head of the office, and Dr. Sally Smith Hughes, medical history interviewer. After some discussion, we agreed that the events from 1981-1984 needed to be documented and we would fund it. This was a time when many crucial decisions on the clinical, public health, social, and political issues pertaining to AIDS were made with little scientific information and no precedents to rely on. The consequences of many of these decisions are still being felt today. With the discovery of HIV, however, the framework for decision making shifted to different ground, and a pioneering phase was over. Once we decided on the scope of the project, it was a simple task to identify prospective interviewees, for we worked with many of these individuals during those years.

Dr. Sally Hughes has shared our enthusiasm from the beginning. We are pleased that her efforts are now coming to fruition.

David A. Lennette, Ph.D.
Evelyne T. Lennette, Ph.D.

November 1994
Virolab, Inc.
Berkeley, California

SERIES INTRODUCTION--by James Chin, M.D., M.P.H.

As the California state epidemiologist responsible for communicable disease control from the early 1970s to the late 1980s, I had the privilege and opportunity to work with all of the participants who were interviewed for the San Francisco AIDS Oral History Project. I consider it an honor to have been asked to provide a brief introduction to the role that these individuals played in the history of AIDS in San Francisco during the early years. Before I begin, the following quote from Dr. James Curran, in a December 1984 issue of the *San Francisco Chronicle* sums up what has happened to all of the participants in this oral history project:

> I'd like to sound more upbeat about this, but there are some unavoidable facts we need to face. AIDS is not going away. Gay men don't want to hear that. Politicians don't want to hear that. I don't like to hear that. But for many of us, AIDS could well end up being a lifelong commitment.

The first recognized cases of AIDS were reported in the *Morbidity and Mortality Weekly Report (MMWR)* on June 5, 1981. I recall this report vividly. A few months earlier, the Centers for Disease Control (CDC) had begun sending an advance copy of the *MMWR* text to state health departments. The advance text of the June 5 *MMWR* had a lead article on the sudden and unexplained finding of five apparently unrelated cases of *Pneumocystis carinii* pneumonia in five young gay men from Los Angeles. The *MMWR* text was received in my office just before our weekly Tuesday afternoon staff meeting was to start. I handed the text to Tom Ault, who was responsible for the state's venereal disease field unit and asked him to have some of our federal- or state-assigned staff in Los Angeles assist in the investigation of these cases. I remember saying to him that it may not turn out to be much of anything, but it may be the start of something. I never imagined that that something would eventually develop into a worldwide epidemic of disease and death.

In the ensuing weeks and months, it became apparent that the mysterious illness reported from Los Angeles was also present among gay men in San Francisco. From 1981 to 1984, the numbers of AIDS cases reported from San Francisco rose almost exponentially--from a handful in mid-1981 to well over 800 towards the end of 1984. The impact that AIDS has had in San Francisco is unequaled on a per capita basis anywhere in the developed world. If the AIDS prevalence rate of about one AIDS case per 1,000 population that was present in San Francisco at the end of 1984 was applied nationally, then there would have been about a quarter of a million AIDS cases nationwide instead of the 7,000 that were actually reported. During the first few years of what was initially referred to as GRID (gay-related immune deficiency), there was general denial of the severity of this newly recognized mystery disease even in San Francisco. The enormity of the AIDS problem was first fully accepted by the gay community in San Francisco, and physicians and researchers in the city rapidly became the leading experts in the country on the medical management, prevention, and control of AIDS. In contrast to Los Angeles and New York, which also have had large concentrations of AIDS cases, the gay community in San Francisco has been more unified and organized in developing political and community support for the treatment and care of AIDS patients.

The epidemiology of AIDS, namely, that it is caused primarily by a sexually transmitted agent, was fairly well established by 1983, well before HIV was eventually isolated and etiologically linked to AIDS in 1984. Public health investigations in San Francisco, spearheaded by Selma Dritz in 1981 and 1982, provided much of the key epidemiologic data needed to understand the transmission and natural history of HIV infection. The more formal epidemiological studies of AIDS among gay men in San Francisco were carried out by Andrew Moss at San Francisco General Hospital (SFGH) and Warren Winkelstein at the University of California at Berkeley. All of these studies were helpful to Mervyn Silverman (who during this period was director of the San Francisco Department of Public Health) to support his decision in October 1984 to close the San Francisco bathhouses. Selma Dritz retired from her position with the health department in 1984, and Mervyn Silverman has moved on to become the premier HIV/AIDS frequent flier in his current position as president of the American Foundation for AIDS Research, which is now supporting studies internationally.

Jay Levy was an established virologist when AIDS was first detected and reported in 1981. His laboratory isolated and characterized a virus which he initially called ARV--AIDS Related Virus. He continues to play a prominent role in the quest to better understand the pathogenesis of HIV. Herbert Perkins was the scientific director of the Irwin Memorial Blood Bank in San Francisco during the critical period around 1982-1985 when data began accumulating to indicate that the cause of AIDS might be an infectious agent which could be transmitted via blood. Under his direction, the Irwin Memorial Blood Bank in May 1984 was the first blood bank in the country to begin routine surrogate testing of blood units for the AIDS agent using a hepatitis B core antibody test. He retired as director of Irwin Memorial in April 1993, but remains very much involved in defending the blood bank from legal suits arising from transmission of HIV via blood transfusions during the early years. Don Francis did not work in California during the early 1980s, but directed epidemiologic and laboratory studies on AIDS as the first head of the AIDS laboratory at CDC in Atlanta during this time period. Following his request to become more directly involved with field work and HIV/AIDS program and policy development, he was assigned to work in my office in Berkeley in 1985. Don took an early retirement from CDC in 1992 and continues to actively work in the San Francisco Bay Area as well as nationally and internationally on the development of an AIDS vaccine.

The clinical staffs of San Francisco General Hospital and the University of California at San Francisco established the two earliest AIDS clinics in the country, and in 1983, Ward 5B at SFGH was set up exclusively for AIDS patients. In the early 1980s, Don Abrams and Paul Volberding were two young physicians who found themselves suddenly thrust into full-time care of AIDS patients, a responsibility which both are still fully involved with. As a result of their positions, experience, and dedication, both are acknowledged national and international experts on the drug treatment of HIV and AIDS patients. Merle Sande, John Ziegler, Arthur Ammann, and Marcus Conant were already well established and respected clinicians, researchers, and teachers when AIDS was first detected in San Francisco. Their subsequent work with HIV/AIDS patients and research has earned them international recognition. The Greenspans, Deborah and John, have established themselves as the foremost experts on the oral manifestations of HIV/AIDS, and Constance Wofsy is one of the leading experts on women with HIV/AIDS. There is rarely a national or international meeting or conference on AIDS where most, if not all, of these San Francisco clinical AIDS experts are not present and speaking on the program. The number of HIV/AIDS clinicians and research scientists from San Francisco invited to participate in these medical and scientific meetings usually far exceeds those from any other city in the world. All of these individuals have made tremendous contributions to the medical and dental management of HIV/AIDS patients in San Francisco and throughout the world.

As of late 1994, more than a decade since the advent of AIDS in San Francisco, Jim Curran's remark in 1984 that "...for many of us, AIDS could well end up being a lifelong commitment" has been remarkably accurate for virtually all the participants in this San Francisco AIDS Oral History Project.

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September 1994
Berkeley, California

SERIES HISTORY--by Sally Smith Hughes, Ph.D.

Historical Framework

In 1991, Evelyne and David Lennette, virologists and supporters of previous Regional Oral History Office (ROHO) projects in virology and horticulture, conceived the idea for an oral history series on AIDS. They then met with Willa Baum (ROHO director) and me to discuss their idea of focusing the series on the medical and scientific response in the early years (1981-1984) of the AIDS epidemic in San Francisco, believing that the city at this time played a particularly formative role in terms of AIDS medicine, organization, and policy. Indeed San Francisco was, with New York and Los Angeles, one of the three focal points of the epidemic in the United States, now sadly expanded worldwide.

The time frame of the oral history project is historically significant. Nineteen eighty-one was the year the epidemic--not until the summer of 1982 to be officially christened "AIDS"--was first recognized and reported. A retrovirus was isolated in 1983, and by early 1985, diagnostic tests were being marketed. These achievements signaled a turning point in the response to the epidemic. Its science shifted from a largely epidemiological approach to one with greater emphasis on the laboratory. As soon as the virus was determined, scientific teams in the United States and Europe raced to characterize it in molecular terms. Information about the molecular biology of the human immunodeficiency virus (HIV), as it was named, was in turn expected to transform AIDS medicine by providing a basis for treatment and prevention of the disease through new drugs and vaccines.

San Francisco continued to make important contributions to combating the epidemic, but by early 1985 it had lost its pioneering role. The AIDS test showed that the epidemic reached far beyond the three original geographic centers and involved large numbers of symptomless HIV-positive individuals, who were not identifiable prior to the test's advent. AIDS funding increased; the number and location of AIDS researchers expanded; research interest in the newly identified virus took center stage. San Francisco's salient position in the AIDS effort faced competition from new players, new research interests, and new institutions. The first phase of the epidemic was history.

Project Structure

Within the limits of funding and the years of the project (1981-1984), the Lennettes suggested eight potential interviewees whom they knew to have played important medical and scientific roles in the early years of the San Francisco epidemic. (Both Lennettes have close connections with the local AIDS research community, and Evelyne Lennette was a scientific collaborator of three interviewees in this series, Jay Levy and John and

Deborah Greenspan.) I then consulted Paul Volberding, an oncologist at San Francisco General Hospital with an international reputation as an AIDS clinician. He and others in the oral history series made several suggestions regarding additional interviewees, expanding my initial list to fourteen individuals.[1] My reading of primary and secondary sources and consultation with other authorities confirmed the historical merit of these choices.

The series consists of two- to ten-hour interviews with seventeen individuals in epidemiology, virology, public health, dentistry, and several medical specialties. By restricting phase one to San Francisco's early medical and scientific response to the epidemic, we aim to provide in-depth documentation of a major aspect, namely the medicine and science it generated in a given location, at a given time, under near-crisis conditions. Like any human endeavor, medicine and science are embedded in the currents of the time. As these oral histories so graphically illustrate, it is impossible to talk about science and medicine without relating them to the social, political, and institutional context in which they occur. One of the strengths of oral history methodology is precisely this.

This concentration on physicians and scientists is of course elitist and exclusive. There is a limit--practical and financial--to what the first phase of a project can hope to accomplish. It was clear that the series needed to be extended. Interviews for phases two and three of the oral history project, a series with AIDS nurses and a third with community physicians with AIDS practices, have been completed and serve to broaden the focus. The long-range plan is to interview representatives of all sectors of the San Francisco community which contributed to the medical and scientific response to AIDS, thereby providing balanced coverage of the city's biomedical response.

Primary and Secondary Sources

This oral history project both supports and is supported by the written documentary record. Primary and secondary source materials provide necessary information for conducting the interviews and also serve as essential resources for researchers using the oral histories. They also orient scholars unfamiliar with the San Francisco epidemic to key participants and local issues. Such guidance is particularly useful to a researcher faced with voluminous, scattered, and unorganized primary sources, characteristics which apply to much of the AIDS material. This two-way "dialogue" between the documents and the oral histories is essential for valid historical interpretation.

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[1] A fifteenth was added in 1994, when the UCSF AIDS Clinical Research Center provided partial funding for interviews with Warren Winkelstein, M.D., M.P.H., the epidemiologist directing the San Francisco Men's Health Study. A sixteenth and seventeenth, with Lloyd "Holly" Smith, M.D., and Rudi Schmid, M.D., were recorded in 1995 when the UCSF Academic Senate allocated funds for transcription.

Throughout the course of this project, I have conducted extensive documentary research in both primary and secondary materials. I gratefully acknowledge the generosity of Drs. Arthur Ammann, Marcus Conant, John Greenspan, Herbert Perkins, Warren Winkelstein, and John Ziegler in opening to me their personal documents on the epidemic. Dr. Frances Taylor, director of the Bureau of Infectious Disease Control at the San Francisco Department of Public Health, let me examine documents in her office related to closure of city bathhouses in 1984. Sally Osaki, executive assistant to the director of the health department, gave me access to documents from former Mayor Dianne Feinstein's papers on her AIDS activities. I am grateful to both of them.

Dr. Victoria Harden and Dennis Rodrigues of the NIH Historical Office assisted by sending correspondence and transcripts of a short telephone interview with John Ziegler, which Rodrigues conducted.[1] I thank Dr. James Chin for his introduction to this series, which describes his first-hand experience of the epidemic as state epidemiologist at the California Department of Health Services where he was responsible for communicable disease control. I also thank Robin Chandler, head of Special Collections, UCSF Library, and Bill Walker, former archivist of UCSF's AIDS History Project and the San Francisco Gay and Lesbian Historical Society, for their assistance in accessing these rich archival collections.

The foregoing sources have been crucial in grounding the interviews in specifics and in opening new lines of questioning. A source to be noted, but untapped by this project, is the California AIDS Public Policy Archives, which is being coordinated by Michael Gorman, Ph.D., at San Francisco General Hospital.

Of the wealth of secondary historical sources on AIDS, the most pertinent to this project is Randy Shilts' *And the Band Played On*.[2] Although criticized for its political slant, it has been invaluable in providing the social, political, and ideological context of early AIDS efforts in San Francisco, particularly in regard to San Francisco's gay community.

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[1] Telephone interview by Dennis Rodrigues with John L. Ziegler, M.D., January 5, 1990. Tapes and transcripts of the interview are available in the NIH Historical Office, Bethesda, MD.

[2] Randy Shilts. *And the Band Played On: Politics, People, and the AIDS Epidemic*. New York: Penguin Books, 1988.

Oral History Process

The oral history methodology used in this project is that of the Regional Oral History Office, founded in 1954 and producer of over 1,400 archival oral histories. The method consists of background research in primary and secondary sources; systematic recorded interviews; transcription, editing by the interviewer, and review and approval by the interviewee; deposition in manuscript libraries of bound volumes of transcripts with table of contents, introduction, interview history, and index; cataloging in national on-line library networks (MELVYL, RLIN, and OCLC); and publicity through ROHO news releases and announcements in scientific, medical, and historical journals and newsletters and via the UCSF Library web page (http://www.library.ucsf.edu/).

Oral history as an historical technique has been faulted for its reliance on the vagaries of memory, its distance from the events discussed, and its subjectivity. All three criticisms are valid; hence the necessity for using oral history documents in conjunction with other sources in order to reach a reasonable historical interpretation.[1] Yet these acknowledged weaknesses of oral history, particularly its subjectivity, are also its strength. Often individual perspectives provide information unobtainable through more traditional sources. For example, oral history in skillful hands provides the context in which events occur--the social, political, economic, and institutional forces which shape the evolution of events. It also places a personal face on history which not only enlivens past events but also helps to explain how individuals affect historical developments.

The foregoing criticisms could be directed at the AIDS oral history series. Yet this series has several mitigating characteristics. First, it is on a given topic in a limited time frame with interviewees focused on a particular response, namely the medical and scientific. Thus although each interviewee presents a distinctive view of the epidemic, multiple perspectives on the same events provide an opportunity for cross-checking and verification, as well as rich informational content. Furthermore, most of the interviewees continue to be actively engaged in AIDS work. Hence, the memory lapses resulting from chronological and psychological distancing from events discussed are less likely to occur than when the interviewee is no longer involved.

An advantage of a series of oral histories on the same topic is that the information each contains is cumulative and interactive. Through individual accounts, a series can present the complexities and interconnections of the larger picture--in this case, the medical and scientific aspects of AIDS in San Francisco. Thus the whole (the series) is greater than the sum of its parts (the individual oral histories), and should be considered as a totality. To encourage this approach, we decided to bind several oral histories together in each volume.

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[1] The three criticisms leveled at oral history also apply in some cases to other types of documentary sources.

Another feature of an oral history series is that later interviews tend to contain more detailed information because as the series unfolds the interviewer gains knowledge and insight from her informants and from continued research in primary and secondary sources. This was indeed the case in the AIDS series in which the later interviews benefited from my research in private document collections made available to me as the project progressed and by the knowledge I gained from the interviews and others connected with the AIDS scene.

A feature of this particular series is its immediacy, a characteristic less evident in oral histories conducted with those distanced from the topic of discussion. These are interviews with busy people who interrupted their tight schedules to look back, sometimes for the first time, at their experiences of a decade or so ago. Because many have not had the luxury of time to contemplate the full meaning of their pasts, the oral histories could be criticized for lacking "historical perspective." But one could also argue that documents intended as primary historical sources have more scholarly value if the information they contain is not filtered by the passage of years and evolving personal opinions.

The oral histories also have a quality of history-in-progress. With few exceptions, the interviewees are still professionally engaged in and preoccupied by an epidemic which unhappily shows no sign of ending. The narrators are living the continuation of the story they tell. Neither they nor we can say for sure how it will end.

Other Oral History Projects Related to AIDS

Oral history projects on other aspects of the San Francisco epidemic are essential for full historical documentation and also mutually enrich one another. Unfortunately, not enough is currently being done in this regard. Two local projects are Legacy, directed by Jeff Friedman, which focuses on the Bay Area dance community tragically decimated by AIDS, and Clarissa Montanaro's AIDS Oral History Project, which interviews people with AIDS. An installation, "Project Face to Face", directed by Jason Dilley and using excerpts from interviews with people with AIDS, was exhibited around the San Francisco Bay Area and in 1991 was part of the inaugural exhibit at the Smithsonian's Experimental Gallery.

AIDS oral history projects outside San Francisco include documentation by Victoria Harden, Ph.D., Caroline Hannaway, Ph.D., and Dennis Rodrigues of the NIH Historical Office of the contribution made by NIH scientists, physicians, and policymakers to the AIDS effort. Gerald Oppenheimer and Ronald Bayer at Columbia, with support from the National

Library of Medicine and the Royal Marx Foundation, are conducting interviews with AIDS physicians in several cities across the United States. The New Jersey AIDS Oral History Project, sponsored by the University of Medicine and Dentistry of New Jersey, interviews faculty and staff involved in the epidemic and representatives of organizations providing AIDS support services. Rosa Haritos, Ph.D., at Stanford relied substantially on oral history in her dissertation on the controversy between the Pasteur Institute and NIH over the discovery of the AIDS virus.[1] In England, Virginia Berridge, Ph.D., co-director of the AIDS Social History Programme at the London School of Hygiene and Tropical Medicine, employs oral history in her research on AIDS policy in the UK.[2] And Maryinez Lyons, Ph.D., at the University of London, uses interviews in her work on the political economy of AIDS in Uganda.[3] In France, Anne Marie Moulin, M.D., Ph.D., Director of Research at INSERM, Paris, has relied on oral history in some of her work on the epidemic in France. The anthropologist, Paul Farmer, used interviews heavily in his work on AIDS in Haiti.[4]

Emerging Themes

What themes can be extracted from these oral histories? What do they convey about the medical response to AIDS in San Francisco? Was it unique, or are there parallels with responses to other epidemics? What do these interviews tell us about the complex interweaving of factors--social, political, economic, and personal--which shaped reactions to this epidemic, in this city, in these years?

The short answer is that it is too soon to attempt definitive answers. This is the third volume in a lengthy series, and most of the oral histories are not completely processed nor has the information they contain been fully assessed.

Furthermore, there is an inherent danger in reaching definitive conclusions on the basis of oral histories with only seventeen individuals.

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[1] Rosa Haritos. Forging a Collective Truth: A Sociological Analysis of the Discovery of the AIDS Virus. Ph.D. dissertation, Columbia, 1993.

[2] See: Virginia Berridge and Paul Strong, eds. *AIDS and Contemporary History*. Cambridge: Cambridge University Press, 1993.

[3] Maryinez Lyons. AIDS and the Political Economy of Health in Uganda, paper presented at a conference, AIDS and the Public Debate: Epidemics and their Unforeseen Consequences, sponsored by the AIDS History Group of the American Association for the History of Medicine, Lister Hill Center, NIH, Bethesda, MD, October 28-29, 1993.

[4] Paul E. Farmer. *AIDS and Accusation: Haiti and the Geography of Blame*. Berkeley: University of California Press, 1992.

Obviously, this is not a statistical sampling. On the other hand, because these seventeen have been at the front line of the epidemic and in a city hit hard by the epidemic, their voices "count" more than their numbers might suggest. They also "count" because these individuals helped devise organizations and policies that have served as models for AIDS programs across the country and around the world. Thus, if used in conjunction with the traditional documentary sources, these oral histories "count" as rich historical sources on several levels.

Remembering these caveats, I will make some tentative suggestions about a few of the many themes which come to the fore as I put the first volume together. My thoughts will doubtless be modified and extended as I examine the oral history collection as a whole and assess it in the context of the existing literature on AIDS history.

--Professional and personal "preparation" for the epidemic:

Narrators invariably mentioned how their prior education and professional training and experience had prepared them for participation in the epidemic. Their training as oncologists or epidemiologists or infectious disease specialists "fitted them" in a deterministic sense to take notice when the epidemic was first recognized in San Francisco. Their interest piqued, they chose to become engaged because their professional knowledge, experience, and responsibility placed them in a position to contribute. How then to explain why others with similar backgrounds chose not to become involved? The interviews indicate that psychological makeup, humanitarian concerns, career ambition, sexual orientation, and simply being needed and on the scene also played a role.

--Organizing for the epidemic:

The oral histories describe at length, in detail, and on many levels how the academic medical profession in San Francisco organized to respond to the epidemic. The focus is on university physicians, but the oral histories show that it is impossible to talk about the medical response without at the same time mentioning its interconnections with the community physician, nursing, psychiatric, and social service professions, the gay community, and volunteer AIDS support organizations. Discussion of the coordinated medical system created in the early years of the epidemic, capsulized in the so-called San Francisco model of comprehensive AIDS care, permeates the oral histories. The complex process by which a community organizes to diagnose, investigate, and treat a newly recognized disease is detailed here, as are the spinoffs of these activities--the foundation of two AIDS clinics, an AIDS ward, and a specimen bank; funding efforts; education and prevention programs; epidemiological and laboratory studies; political action at the city, state, and national levels; and so on.

--The epidemic's impact on the professional and personal lives of physicians and scientists:

Surprisingly, despite the flood of AIDS literature and the centrality of the medical profession in the epidemic, there are few accounts by physicians of the epidemic's professional and personal impact.[1] The physicians' voices which speak--at times poignantly, but always with immediacy--through these oral histories are a small corrective to the impersonality of most of the literature on AIDS.

On a professional level, the narrators describe commitment, concern, cooperation, camaraderie, and conflict as attributes of their engagement in the epidemic. Clinicians and epidemiologists confronted by what they perceived as a medical emergency described the prevailing sense of urgency and dedication of the epidemic's early years--to stop the insidious spread of disease, to discover its cause, to devise effective treatments, to establish community care arrangements. Narrators talked of concern for an articulate, informed, and youthful patient population, with whom some identified and for whom most felt great sympathy. They also spoke of the camaraderie and cooperation of the physicians, nurses, social workers, and community volunteers assembled at UCSF and San Francisco General to run the AIDS clinics and ward. But they also mentioned conflict--personal and institutional rivalries, funding problems, and run-ins with the university administration, city politicians, and gay activists.

On a personal level, the interviews recount the epidemic's impact on individual lives--of fear of a devastating and lethal infection, of stigma and homophobia involved in dealing with socially marginal patient populations, of exhaustion and burnout, and of growth in human experience and insight.

--The epidemic as a social and cultural phenomenon:

These oral histories describe the complex interactions between disease and its social and cultural context. They indicate how the unique circumstances of San Francisco in the early 1980s--its large and vocal gay community, its generally cooperative medical and political establishments, the existence of a city budget surplus--shaped the response to the epidemic.

AIDS, like all disease, reflects social and cultural values. Implicit and explicit in the oral histories are evidence of stigma and homophobia, the politicization of the AIDS effort and those associated with it, and the tension between individual rights and social welfare.

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[1] A few personal accounts by physicians do exist. See, for example: G. H. Friedlander. Clinical care in the AIDS epidemic. *Daedalus* 1989, 118, 2:59-83. H. Aoun. When a house officer gets AIDS. *New England Journal of Medicine* 1989, 321:693-696. The Oppenheimer/Bayer oral history project, mentioned above, also seeks to document physicians' responses.

The foregoing themes are but a few of those inherent in these oral histories. I hope that scholars will be persuaded to explore these further and to discover and research those unmentioned. To serve as a rich, diverse, and unique source of information on multiple levels is after all a major purpose of this oral history series.

Locations of the Oral Histories

The oral history tapes and bound volumes are on deposit at The Bancroft Library. The volumes are also available at UCSF, UCLA, and other manuscript libraries.

Note Regarding Terminology

In this series, both interviewer and interviewee occasionally use the term "AIDS" to refer to the disease before it had been officially given this name in the summer of 1982. "AIDS" is also used to refer to the disease which in recent years has come to be known in scientific and medical circles as "HIV disease." In these oral histories, the term "AIDS" has been retained, even when its use is not historically accurate, because it is the term with which readers are most familiar.

Sally Smith Hughes, Ph.D.
Project Director

October 1996
Regional Oral History Office

LIST OF PARTICIPANTS IN THE AIDS MEDICAL RESPONSE ORAL HISTORY SERIES

VOLUME I

Selma K. Dritz, M.D., M.P.H, Epidemiologist, San Francisco Department of Public Health
Mervyn F. Silverman, M.D., M.P.H., Director, San Francisco Department of Public Health

VOLUME II

Donald I. Abrams, M.D., AIDS Internist at San Francisco General Hospital
Marcus A. Conant, M.D., AIDS Physician and Political Spokesman
Andrew A. Moss, Ph.D., Epidemiologist at San Francisco General Hospital

VOLUME III

Arthur J. Ammann, M.D., Pediatric AIDS Physician and Administrator, UCSF
Paul A. Volberding, M.D., AIDS Oncologist at San Francisco General Hospital
Constance B. Wofsy, M.D., Authority on Pneumocystis carinii Pneumonia and Women with AIDS, San Francisco General Hospital

VOLUME IV

Donald P. Francis, M.D., D.Sc., Epidemiology and Virology at the Centers for Disease Control
Merle A. Sande, M.D., Infectious Disease Specialist; Professor of Medicine, UCSF-SFGH; AIDS Activities at San Francisco General Hospital
John L. Ziegler, M.D., Ph.D., Professor of Medicine, UCSF; AIDS Oncologist at the Veterans Administration Medical Center, San Francisco

VOLUME V

Herbert A. Perkins, M.D., President, Irwin Memorial Blood Centers

VOLUME VI

Deborah Greenspan, B.D.S., D.Sc., Oral Manifestations of AIDS
John S. Greenspan, B.D.S., Ph.D., FRCPath, AIDS Specimen Bank, UCSF

IN PROCESS

Jay A. Levy, M.D., Virologist, UCSF: Isolation of the AIDS Virus (On Hold)
Warren Winkelstein, Jr., M.D., M.P.H., The San Francisco Men's Health Study, UC Berkeley

Regional Oral History Office
The Bancroft Library

University of California
Berkeley, California

The San Francisco AIDS Oral History Series

THE AIDS EPIDEMIC IN SAN FRANCISCO: THE MEDICAL RESPONSE, 1981-1984

Volume VI

Deborah Greenspan, BDS, ScD

ORAL MANIFESTATIONS OF AIDS

Interviews Conducted by
Sally Smith Hughes
in 1994

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Deborah Greenspan.

INTERVIEW WITH DEBORAH GREENSPAN, BDS, ScD

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INTERVIEW HISTORY--Deborah Greenspan, BDS, ScD

This short oral history with Deborah Greenspan and the longer one with her husband John are the only two in this series which describe the role of dentistry in AIDS research at UCSF. Deborah Greenspan's contributons were to clarify understanding of the relation of certain oral lesions to the presence and progression of AIDS, or HIV disease, with essential contributions from basic scientists such as Evelyne Lennette and Harold zur Hausen. Greenspan helped to establish hairy leucoplakia, which was her name for white patches in the mouth which do not disappear after antifungal treatment, as a diagnostic marker of AIDS.

Dr. Greenspan also describes the interactions she and other members of the School of Dentistry had with physicians in the School of Medicine who, like the Greenspans, chose to engage in AIDS research and patient care in the early years of the San Francisco epidemic. Such ties are evidence of the multidisciplinary response which the new disease evoked as soon as it was recognized.

If the emotional tenor of certain sections of the oral history is a clue, what moved her most was her role as health care provider, as she terms it. Her voice broke as she recalled specific patients who had died of AIDS. "As I speak," she continued after composing herself, "I put a name and a face to all of these people, and if in any way I have made things better for them, then I think I've been very lucky."

Oral History Process

One interview was conducted with Dr. Greenspan, in her office in the UCSF School of Dentistry. The lightly edited transcripts were sent to her and returned with only a few changes after a lengthy delay. Read together with that of her husband and colleague, the oral history provides a view of dentistry, a discipline generally neglected in AIDS history, as an early participant in San Francisco's response to the AIDS epidemic.

The Regional Oral History Office was established in 1954 to augment through tape-recorded memoirs the Library's materials on the history of California and the West. Copies of all interviews are available for research use in The Bancroft Library and in the UCLA Department of Special Collections. The office is under the direction of Willa K. Baum, Division Head, and the administrative direction of Charles B. Faulhaber, James D. Hart Director of The Bancroft Library, University of California, Berkeley.

Sally Smith Hughes, Ph.D.
Research Historian and Principal Editor

July 1998
Berkeley, California

INTERVIEW WITH DEBORAH GREENSPAN, BDS, ScD

I EDUCATION AND EARLY CAREER

Dental Education and Practice in England

[Date of Interview: September 13, 1994] ##[1]

Hughes: Dr. Greenspan, would you tell me where and when you were born and a bit about your early education and career?

D. Greenspan: I was born in England and educated in London. I did my dental training at the Royal Dental Hospital, School of Dental Surgery in London, and graduated from there in 1963. Actually, it was December 1962, but my degree was granted, I think, January of 1964. I came to the United States for the first time on sabbatical in 1972. We were here for a year. Went back to England for three years, and then in 1976, we returned and in fact have been living here ever since.

Early Career at UCSF

D. Greenspan: When I first came back and worked here at UCSF, my interest was in oral soft tissue disease. I worked in oral medicine in the oral medicine clinic. During the next two years [1976-1978], I did a fellowship in oral medicine. My interests were in problems related to cancer and cancer therapy, so some of my early interests were in the side effects of radiation therapy to the head and neck, and the consequences of that therapy. I was also interested in the consequences of therapy for other malignancies, and what happens when people have chemotherapy. So at the beginning, my interests were really in the cause and management of xerostomia, dry mouth, and also the oral mucosal problems that go along with both radiation therapy and chemotherapy.

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[1] ## This symbol indicates that a tape or tape segment has begun or ended. A guide to the tapes follows the transcript.

I was also interested in looking at the effect of therapy to mitigate the effects of radiation treatment, and also to treat the opportunistic infections. So some of my early work was done looking at the effects of pilocarpine in the management of radiation-induced xerostomia.

I also became very interested in candidiasis, because oral candidiasis is a very common feature of xerostomia and side effects of cancer therapy. It's unusual to see oral candidiasis in patients who do not have some other predisposing factor. Such factors include drugs such as steroids and antibiotics, underlying medical conditions such as diabetes and anemia, and importantly, people who are immunosuppressed, immunocompromised, for whatever reason. So between 1976 and 1980, in those four years, primarily my interests, as I said, were in the management of dry mouth and in the management of oral candidiasis.

I was at that time involved in a study of a new drug for use in the treatment of oral candidiasis. Because I was recruiting quite heavily for the study, I had spoken to Marc Conant[1] in dermatology, and Don Abrams[1] who at that time was a heme/onc [hematology/oncology] fellow, in order to find people who would be suitable for my study of a new drug in the treatment of oral candidiasis.

Oral candidiasis has several distinct clinical presentations, the most common of which is one that's often called thrush. We call it pseudomembranous candidiasis, and its clinical appearance is that of white removable patches which can occur anywhere in the oral mucosa. There is also a slightly less common form which is called hyperplastic candidiasis, where there is epithelial response with a hyperkeratosis because of the presence of candida in the epithelium. Sometimes it can be called candida leukoplakia, as another term.

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[1] See the oral histories of Drs. Conant and Abrams in The AIDS Epidemic in San Francisco: The Medical Response, 1981-1984, Volume II, Regional Oral History Office, The Bancroft Library, University of California, Berkeley. Hereafter, this series.

We had worked in prior years with Don Abrams on another study not related to candidiasis at all, but related to aphous ulcers, when we were looking to see if there were any hematologic changes in people who got the very common lesion, aphous ulcers, often known as canker sores. So that relationship had been set up for that reason.

II THE AIDS EPIDEMIC

Oral Candidiasis in Gay Men

D. Greenspan: During the period of the study--one of them started in 1978-1979; another one started in 1980-1981--we were heavily recruiting patients for my study of oral candidiasis. I started to receive referrals both from Marc Conant and Don Abrams, with the comment, "Oh, I'm sure this person has oral candidiasis, but I've given them a particular drug and it hasn't cleared, and so why don't you do something about it? You know all about oral lesions, and anyway, you've got a new drug, and maybe it will work." So during that time, not only was I seeing people who were coming to the clinic from other sources, but also the odd one here and there referred from either Don Abrams or Marc Conant, amongst others.

When I look back through some of my slide collections of some of the early people who were in that study of oral candidiasis, it is interesting to me that at that time when I saw them with oral candidiasis, 1979 and 1980, we actually had no knowledge about AIDS or GRID[1] or any notion that this disease even existed. Yet I saw these people with oral candidiasis, and then saw them again several years later, when we knew that in fact they were HIV-positive. So at the end of the seventies through early 1981, people who were being recruited into my study for oral candidiasis were, we learned subsequently, HIV-positive. Or by the time I may have seen them again, had what was then an AIDS diagnosis.

Hughes: All of them?

D. Greenspan: No, a few.

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[1] Gay-related immune deficiency, an early and controversial term for what later was called AIDS.

Hughes: Before you realized what was going on, had you found any commonality among these patients?

D. Greenspan: No, not at that time, because there were small numbers, and they sometimes had other reasons for having candida, although some of them were a little bit of a puzzle. It wasn't until we looked at all the numbers that we realized in fact that we had a lot of young men in the study, that many of them were smokers, several of them had been on antibiotics in the previous two months--so there were other reasons. Some of them had had gut parasites and had been treated for that. Some of them had had STD [sexually transmitted disease] and had been treated for that. So there were other reasons for them to perhaps develop candida.

With hindsight, one can see of course that these were young gay men, and that sexually transmitted disease was their risk. But at the time of the study, they had oral candidiasis, and when one looked back through their prior history of what had happened to them in the previous three to six months, one could see that perhaps there were some other reasons for them getting candida. The numbers were small, but nevertheless there were the few cases in those early studies that I later saw--many years later, in fact.

So my initial interest at that point was oral candidiasis. My other interest was malignancies of the head and neck. I was particularly interested in early detection of malignancy. One of the problems with squamous cell carcinoma of the head and neck is that successful treatment really depends upon very early detection and management of the very early lesions, but they're often missed, because they can be small. They can be in parts of the mouth that are not easily examined, and they can be painless. So sadly, many times when we see squamous cell carcinoma, the lesions have become large, and therefore the prognosis is not so good, when you have a large, well-established lesion that has metastasized.

Now, one of the very early lesions that can be a squamous cell carcinoma or can be dysplasia is often called leukoplakia, which is a white patch in the mouth. My other interest had been early detection and recognition of dysplastic and early squamous cell carcinoma, and the only way that you can make that type of diagnosis is from a biopsy.

Here we are at about 1979-1980, and my interests are the management of oral candidiasis, the management of xerostomia, early detection of head and neck malignancies, and diagnosis of white lesions and red lesions in the mouth.

Hairy Leukoplakia

Recognizing Leukoplakia in Gay Men

D. Greenspan: During this time I was seeing and managing patients with oral candidiasis. I was also seeing patients who had white patches in the mouth that were not responding to antifungal therapy. We didn't have a lot of "antifungals" actually in the late seventies and early eighties. That's the time when new antifungals like Mycelex and Ketochorazole were being tested and evaluated for use.

Hughes: Now, the white patches were synonymous with leukoplakia? That was the diagnosis?

D. Greenspan: A non-removable white patch in the mouth is called a leukoplakia. Leukoplakia simply means white patch, and the difference between a leukoplakia and pseudomembranous candidiasis is that pseudomembranous candidiasis is a removable white patch and leukoplakia is a non-removable white patch. Some of these leukoplakias may represent dysplasia, atypia, or early squamous cell carcinoma. And in 1980 and 1981, I saw people with white lesions on the tongue that were thought to be due to candida that in fact didn't respond to antifungal therapy, and therefore we biopsied them, because you need to biopsy white patches to find out what they are, to make sure that there is no dysplasia or carcinoma.

The biopsies found slightly unusual appearances in the epithelium, that these were lesions that had no evidence of dysplasia or atypia, no evidence of candida, but nevertheless were a hyperkeratosis. We saw several cases over a period of two or three months. I biopsied each one. Some of these patients indeed did have candida when I first saw them, and we treated the candida and the candida was no longer present, but the lesion remained.

Hughes: Candida and leukoplakia can appear in one area?

D. Greenspan: They can appear in the same lesion.

Hughes: Can you diagnose them with the naked eye?

D. Greenspan: You have to take smears from the lesion, and you take scrapings. You put scrapings in potassium hydroxide; you cover them with a cover slip and look at them under the microscope. Often stains can also be used. You can use culture to identify what type of organism you have growing there. We had done all of these things, and many of these cases did indeed have candida present in the lesion. But when you treated the candida, the lesion still persisted, and those were the cases that were biopsied.

Hughes: Is leukoplakia a condition that can be caused by several different organisms?

D. Greenspan: Leukoplakia essentially is not caused by an organism. Leukoplakia only is a clinical description. It means a white patch. So there are lots of things that can cause leukoplakia.

Hughes: Did you think it could be caused by a microorganism?

D. Greenspan: No, not necessarily.

So we had patients who had candidiasis, and patients where all the lesions disappeared with treatment, and we had patients who had white patches on the tongue who also had candida, but when the candida was treated, the white patch remained. Those were the cases that were biopsied.

Detecting Ballooning Cells

D. Greenspan: What we found was that, although there was no evidence of dysplasia or atypia, there was a hyperkeratosis, and in part of the connective tissue there were some unusual-appearing cells. We called them ballooning cells. This was not remarkable when you saw any one case, but as I said, over a period of several months, we saw several cases, and these cases were biopsied, and in fact, they all had ballooning cells.

It so happens that my husband [John S. Greenspan][1] is on the pathology service, and he had been on many of these cases. One day I said to him, "You know, it's funny. You keep talking about all the ballooning changes in this leukoplakia, and it doesn't seem to be like any other leukoplakia we've ever seen before." He said, "Why don't we get all the slides of the cases together, and let's have a look and see if in fact there's any similarity between them?"

So we looked at about six cases that I had biopsied. We pulled all the slides. And indeed, all of these six cases histologically looked very similar. When we looked at the clinical photographs, again they looked very similar. At that point, we decided that we should really investigate what was causing these ballooning changes. At first, we thought that it looked a little bit like a viral infection with a virus called the human papilloma virus [HPV]. The HPV causes changes in the epithelium.

So we were particularly interested to explore the role of HPV in these lesions. To our surprise, we found that some of our cases indeed stained positive to HPV.

Hughes: Can you put a date to this?

D. Greenspan: All this work was done sort of 1981-82, and early 1983. The cases were very small in number at this time.

The Naming of Hairy Leukoplakia [HL]

D. Greenspan: We then decided that we would look again in more depth for evidence of virus in this hairy leukoplakia [HL]. We then started to collect and look at specimens of hairy leukoplakia using the electron microscope.

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[1] See the oral history in this volume with John S. Greenspan.

Hughes: Were you actually calling it "hairy" at that juncture?

D. Greenspan: The cases of leukoplakia that we saw at that time were very prolific, thick white patches, with keratotic outgrowths. It looked to me a little bit like a black hairy tongue (which is another clinical condition associated with antibiotic use) but in fact it was white. One day, one of my colleagues wanted to refer a patient up for me to look at and said, "Look, I'd like you to have a look at this patient. We've given him some antifungal medication, the lesion hasn't gone away, and the tongue is completely covered with all this white stuff. It's sort of like a white hairy tongue." I thought, That's a very good description of it. And because we didn't know what it was, I called it hairy leukoplakia, because it was to my mind just descriptive of what it looked like. It was something that when I talked about it, we all understood what we were talking about.

Hughes: And you were calling it that in 1981-82?

D. Greenspan: Yes.

I probably need to backtrack here. What we found when we looked at all these slides was that there was no inflammatory infiltrate in the connective tissue, that there was hyperkeratosis, and that in the epithelium there were ballooning cells. And it was these ballooning cells that were reminiscent of an epithelial infection with HPV.

Seeking a Virus

D. Greenspan: So we then decided that we would look for HPV in the epithelium, and there are particular histochemical stains that one can use to demonstrate the presence of HPV. HPV is quite common not only in the mouth but in the skin, and also in the anal genital region. In the anal genital region, HPV is associated with dysplasia.

Discovering Epstein-Barr Virus

D. Greenspan: We then looked at HL using the electron microscope [EM], and we looked at a few samples. Viveka Petersen, who works with us with the EM, looked at several samples. I remember it was about five o'clock or something in the evening, and I'm walking down the corridor just outside here. She said, "I found it; I found it!" I said, "Oh, wonderful! You found HPV." She said, "Oh, no, I can't find HPV; I found a herpes particle." You make that determination by the size and appearance under the EM of the individual particles.

So here we were then with some EM on hairy leukoplakia. We found lots of virus, but the virus was not HPV which is what we expected from the in situ work, but in fact was a herpes particle. So we then needed to find out what was going on, what particular herpes virus it was. We approached various collaborators, and finally we found someone who was really interested in working with us, and that was Evelyne Lennette.

Evelyne Lennette's Contribution[1]

D. Greenspan: When we discovered, with Viveka Peterson, who had been looking at our electron micrographs, that the viral particle that we were seeing was consistent with the appearance of a particle of one of the herpes group viruses, we then sought help to identify which of these viruses it was. We talked to a variety of people with expertise to identify HSV [herpes simplex virus] and CMV [cytomegalovirus].

Then we decided to approach Evelyne Lennette to see if she would be interested in working with us. We had done some work with Evelyne looking at a case of non-Hodgkins lymphoma in a patient who subsequently developed PCP, was obviously HIV-positive, although this was early on in the epidemic before we had these tests. Nevertheless, this gay man had a large non-Hodgkins lymphoma. Working with Evelyne Lennette, we sought to identify the presence of EBV in the lymphoma specimen.

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[1] For better continuity, the following section has been moved from the end of this interview.

It was as the result of that contact when we several months later identified the herpes group particles, that we called Evelyne and asked if she would be interested in working with us to identify which of these herpes group viruses it was. She was very excited with the prospect of working with us, and in fact, she may have also worked with Harold zur Hausen. But nevertheless, it was working with Evelyne Lennette on the non-Hodgkins lymphoma--and that case had actually been included in John Ziegler's report of the first non-Hodgkin's lymphomas in the MMWR[1]--to try and identify the presence of EBV, that we subsequently worked with her again to identify herpes virus. And it was her excitement and interest and saying, "Send me what you can, and don't worry about the money," that actually got us started.

Hughes: She had a long association with the Henles and their work on herpes.

D. Greenspan: And zur Hausen had worked in the Henles' lab.

Hughes: So perhaps she and zur Hausen did overlap.

D. Greenspan: Right.[2]

Working with Evelyne Lennette over a period of several months, we were able to establish that this in fact was Epstein-Barr virus.

Hughes: By its microscopic appearance?

D. Greenspan: Well, by her particular studies that she was able to do to demonstrate that in fact this was EBV.

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[1] J. L. Ziegler, Y. Wagner, et al. An outbreak of Burkitt's-like lymphoma in homosexual men. Morbidity and Mortality Weekly Report 1982, 31, 21:277-279.

[2] End of insert.

Epstein-Barr Virus and AIDS

Hughes: Tell me the significance of that finding.

D. Greenspan: What was happening while all the laboratory work was going on was it was obvious to us that we were seeing more and more cases of hairy leukoplakia. It also became very obvious to us during that time that we were actually dealing with what was then an epidemic, and obviously has now become a pandemic. We were seeing in 1981-82 one or two cases, by 1983 and 1984, we were seeing many, many cases each week. So from seeing perhaps one case a month, one case every two months, over that period of time we began to see a tremendous number of cases. When you look at the numbers of AIDS cases that were reported in San Francisco in 1981, you look at the cases reported in 1983-1984; we saw exactly the same thing happening in our clinic, with cases of both oral candidiasis and hairy leukoplakia.

It became very obvious to us that at that time, hairy leukoplakia was synonymous with somebody who was in the AIDS risk group. Remember, we knew about AIDS; we didn't know about HIV.

Hughes: Did you associate immunodeficiency with hairy leukoplakia?

D. Greenspan: Well, if you cast your mind back, we were not sophisticated at that time in understanding how to measure people who were in this pre-AIDS group, which was called by various names. ARC [AIDS-related complex] became a very popular name at that time.

A lot of the early work to try and understand the significance of this disease was through hypersensitivity skin testing. It was only as we got into the eighties that CD4 counts became a popular way of measuring this condition, which we called ARC or pre-AIDS. It was only at that time that the studies in San Francisco were set up: the San Francisco City Clinic Cohort, the San Francisco Men's Health Study.[1] Andrew Moss[2] and others at San Francisco General set up a study of people who were going in there, looking at the course of their disease, and were doing extensive questionnaires on behavior and also starting to develop some laboratory data to try and understand what changes occurred with progression of disease. They were looking at delayed hypersensitivity testing. They were starting to refine the CD4-CD8 counts, whether it was numbers, whether it was percentages, whether it was CD4 count that was important, whether it was CD8. There were a lot of things that we didn't know that because of the pressure of the numbers of cases, we learned a lot about the measurement of disease in the early eighties. Also at that time, Jay Levy[1] was working very hard to identify the virus.

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[1] For more information on the San Francisco Men's Health Study, see the oral history with Warren Winkelstein, M.D. in this series.

[2] See the oral history in this series on Andrew Moss, M.D.

Dentistry's Connections with the AIDS Physicians Group

Hughes: Would you talk about your connections with the AIDS research group, presumably through the KS Clinic?

D. Greenspan: The KS Clinic brought together a group of individuals who were working with this particular disease. So at the beginning, it was merely a question of people coming together and saying, "This is what we're seeing. What is it?" Certainly unquestionably Kaposi's sarcoma. And it was called the KS Clinic, because that was really one of the key things that you could see where you could make a diagnosis and where you could look at Kaposi's sarcoma.

Hughes: Were you seeing KS too?

D. Greenspan: Yes. Kaposi's sarcoma occurs in the mouth, and quite commonly occurs in the mouth before it occurs on the skin.

Hughes: The leukoplakia and the KS went together?

D. Greenspan: Oh, yes.

Hughes: Sometimes in the same patient?

D. Greenspan: Sometimes.

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[1] See the oral history in this series with Jay Levy, M.D.

Hughes: Were you making connections from the very start?

D. Greenspan: I think it was obvious that we were seeing hairy leukoplakia in young gay men, and that this was the same group of individuals who were developing AIDS, or GRID, as it was called.

Hughes: Were you going to the KS meetings from the very start?

D. Greenspan: At the beginning, I would say for the first few months, I didn't go to it every week, but I would go if I could get out of clinic for an hour.

Hughes: What I'm trying to establish, of course, is how much communication there was between what seems initially to have been two separate groups--you here in oral medicine and then the KS group which met over in the dermatology department.

D. Greenspan: Well, what you have to realize is that being on a campus like this, nobody is isolated, and you all work together. And many of the cases that I saw were referrals, as I explained to you earlier. So it was obvious to us that we had patients in common, that some of the patients that we'd seen with oral candidiasis and hairy leukoplakia developed further manifestations of this condition which was to be identified as AIDS. The most common opportunistic infection was in fact PCP [Pneumocystis carinii pneumonia]. So it became very clear that we actually had a group of people here in the city who were all in this risk group, although we didn't call it that then. They were all at risk.

There were a lot of young people--Don Abrams just taking his first active faculty position; Paul Volberding,[1] who had first come here in July of 1981--who realized that we were dealing with something unusual. This KS Clinic was a way of bringing together a group of people who were all seeing different aspects of this--KS, Pneumocystis, the skin lesions, the oral lesions. I think it was Marc Conant who actually made an effort to bring us all together. I think he said, "We have this problem; let's get together." Certainly oral medicine has terrific overlaps with dermatology. And we also have overlaps with oncology, as I explained to you earlier.

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[1] See the oral history in this series with Paul Volberding, M.D.

So it was merely a question of people coming together, just as we have a tumor board for head and neck cancer, just as we have dermatology clinics on Wednesday mornings and we go and listen to their presentations, and we give presentations. It was just part of what happens here at UCSF.

I think what was particularly remarkable, and why this city has managed to mount such a tremendous response, which resulted in superb care for people, was the fact that it was a small number of people in a small city who all came together because of a common curiosity. And that is why we all grew and learned together--Connie Wofsy,[1] Paul Volberding, Donald Abrams, Marc Conant, Andrew Moss, and those who have left and gone further afield--Dick Chasen, George Rutherford--there are many people who came together because of a common curiosity. Jay Levy was here on campus, and was particularly interested and excited; and trying to identify whether there was some form of etiological agent associated with AIDS.

We really became very aware in those early eighties that hairy leukoplakia was obviously seen in people who were going to get AIDS. One of the connections that we made was that people with hairy leukoplakia subsequently developed PCP or Kaposi's sarcoma or one of the other opportunistic infections that we were seeing at that time, and some of those early cases of MAC [mycobacterium avium complex], as well, which had not really been seen before.

So it became obvious that hairy leukoplakia was part of the spectrum of this disease, and that people who had not yet developed AIDS, we felt, with Jay Levy, and then were very well worth studying to see if we could use the people in these studies to try to evaluate the role of HL in disease progression.

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[1] See the oral history in this series with Constance Wofsy, M.D.

More on Hairy Leukoplakia and Epstein-Barr Virus

Hughes: Is hairy leukoplakia considered diagnostic for AIDS?

D. Greenspan: It's not diagnostic for AIDS, but we found that hairy leukoplakia was very clearly associated with Epstein-Barr virus, and also we saw it in people who subsequently went on to develop AIDS. The histological appearance of hairy leukoplakia was unlike anything that we could find described in the literature.

So having established that HL had an unusual histological appearance and was associated with EBV, I then went back and did a search to try and find out if anybody had described similar lesions in the past. I presented our findings at an oral pathology meeting for comment that this was an unusual lesion, and that we felt that it had not been seen before. The first presentation at a meeting was May, 1984.[1] But you've got to remember, for scientific meetings, you put your abstracts in some six months prior to presenting them. So when that was put in for the meeting, we were merely describing the histologic finding, and in fact we had an oral pathology meeting--it was in Boston--and nobody had seen anything like it before. So we all felt that we were dealing clearly with a new lesion. We felt it was definitely associated with HIV infection.

Collaborators

D. Greenspan: We were continuing our work to identify the Epstein-Barr virus [EBV], which we did not only with Evelyne Lennette but with the collaboration of [Harold] zur Hausen in Germany.

Hughes: What specifically was zur Hausen doing?

D. Greenspan: Harold zur Hausen was looking for both HPV and EBV in the lesion, and also trying to decide from the work that was being done under his direction on other studies how to characterize the nature of EBV.

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[1] D. Greenspan, J. S. Greenspan, et al. Oral leukoplakia in ARC (AIDS related complex). Presentation, American Academy of Oral Pathology, Boston, 1984.

Hughes: And Dr. Lennette?

D. Greenspan: Dr. Lennette had actually done different types of studies to identify EBV. At that time, we recognized that people with hairy leukoplakia were developing AIDS more rapidly, and that their first diagnosis was more likely to be PCP than Kaposi's sarcoma.

We then started collaborations with Warren Winkelstein and Bill Lang of the San Francisco Men's Health Study, with George Rutherford and the San Francisco City Clinic Cohort, and with Andrew Moss at San Francisco General. At first we actually examined mouths to look at the occurrence of oral lesions in association with people who were in the risk groups, but then with the development of the antibody test, we examined people whom we knew were HIV-positive. We also looked at where the lesions occurred in relationship to one, being HIV-positive, and two, when people became HIV-positive.

Patient Care

D. Greenspan: What this account has not covered is the tremendous amount of care that we were giving, because you don't do investigations without doing what I think is probably the most important thing, and that's providing care for people. So I think what came first was identifying the lesion, but also then providing oral care for all our patients.

Hughes: Describe what you could do.

D. Greenspan: Well, manage the oral candidiasis, identify some of the other oral problems they had, make sure they had good dental care, got them involved, if they were not already involved, in AIDS-related studies, and essentially provide care. It was very important to do that, because there was almost an anti-AIDS hysteria in the early eighties, where when it became known that young gay men were getting a strange disease, it became very difficult for them to receive dental treatment. I think one of the important things that we were able to do was to provide them with care and to make sure that they received good care. One of the important things that we did here at the school [UCSF] is that we never discriminated against people who were either HIV-positive, or before the antibody test, who might be in a risk group.

Hughes: Were people in the school fearful?

D. Greenspan: Oh, yes.

Hughes: This was before the discovery of the virus?

D. Greenspan: Yes. In a way, I think that the scariest time was before the virus was discovered. When it became very obvious that we were dealing with a life-threatening disease that appeared to be transmissible, and nobody quite understood the risks of acquiring this disease, how it was transmitted, what was the particular nature of the pathogen, whether you could catch it by eating in a San Francisco restaurant, whether you could catch it on the Muni, I think there were a lot of concerns then.

Hughes: How about you?

D. Greenspan: I've often thought about that. And I find it a hard question to answer, because I never, ever remember feeling threatened, scared, although I remember having conversations with other people saying, "Well, I wonder how this virus is transmitted. Is it sexually transmitted? Is it through food?" I think I put it down to the very fine training that I received as a student. Somewhere in my training, I think I developed the notion that if you were a health care provider, you provided health care, and you didn't worry if the bombs were falling; you didn't worry if the polio outbreak in your town affected the greatest number they'd had in the United Kingdom. Family members in the thirties had died of TB, and people still continued to care for them. Maybe it was because I grew up in a time when there was more risk, that something about the teaching I received made me feel that that was part of health care, that I didn't expect health care to be risk free.

Now, I'd like to say that everybody of my age and older felt the same way, but that was by no means the case. So I don't know why I was not troubled by it. I often think that if I could capture what it was in my education that enabled me to think that way, I could pass it on to others. But I really do very strongly believe that when any of us undertake any form of job, we have to recognize what the risks are. If you fly a plane, your risk of crashing is very small, but you have to recognize that is a risk. If you go to war, you have to recognize that the battle may be won, but people will die.

Infection Control in Dentistry

D. Greenspan: I don't know why I felt like that about HIV infection. I just saw that there were people who were in trouble and people whom I could help; based on my knowledge of infectious diseases, I followed the recommendations of the hepatitis B protocol. I felt that if it was sufficient for hepatitis B, that we would just do what we could do.

Hughes: Were those precautions in place before the epidemic?

D. Greenspan: Amazingly, those precautions had been in place and recommended since 1976.

Hughes: Recommended by the ADA [American Dental Association]?

D. Greenspan: Yes. Unfortunately, very few people followed them, and people followed them only under circumstances when they felt they should be followed. So if you thought somebody had hepatitis, or if you were doing a particular procedure that might put you at risk, then you would follow these guidelines. Now, for me, in my discipline, it was very easy to follow those guidelines, because the type of work I did was more akin to surgical procedure than to simple dental procedure.

Hughes: So you routinely used precautions?

D. Greenspan: Yes. For us in the dental school, the significant thing was to put everybody in gloves. We discussed this at length with our dean in the eighties, and the dean established a committee to look at the use of gloves and what we should be doing. I think [Dean] John Greene, perhaps because of his public health background, very clearly realized that everybody had to have dental treatment, and we needed to be able to protect everybody.[1] I like to think that our school set the trend for this country.

Hughes: Was that the 1988 protocol?

D. Greenspan: We started doing this in 1986. We started to try to put everybody into gloves, get patients who looked, quote unquote, to be in some sort of, quote unquote, risk group, out of special rooms and onto the main clinic floor, and decided that we would follow the principle of universal precautions.

Hughes: I read that in association with the KS Clinic very early on, there were oral exams.[2] Were you involved?

D. Greenspan: Well, there was the KS Clinic, where we were just looking at patients, and then there were KS rounds, which were done in the seminar series, where we all came together. It was really the KS rounds that persisted, that brought everybody together, where some of the very early scientific concerns and problems and findings were discussed. The KS Clinic at first was a place where people went for diagnosis of their KS lesions, and then that rapidly became folded into something that was in fact much broader, as it became obvious there were many other problems.

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[1] In June 1988, School of Dentistry Dean John Greene distributed an additional set of infection control protocols to his faculty, students, and staff, augmenting those distributed on February 23, 1988. With this addition, he announced that a comprehensive infection control program for the School of Dentistry was ready to be implemented. He also thanked Dr. Deborah Greenspan for chairing the task force which developed the program. (John C. Greene to Faculty, Students and Staff, June 27, 1988. Binder: AIDS Coordinating Council Historical Report, AIDS Coordinating Council Office, UCSF Faculty/Alumni House.)

[2] Patient protocol. Kaposi sarcoma clinic, UC Departments of Dermatology-Oncology. February 1, 1982 [misdated; should be 1983]. (John L. Ziegler papers, folder: AIDS--KS patients. AIDS History Project Archives, Special Collections, UCSF Library.)

Hughes: But kept that name for a while?

D. Greenspan: It kept it for a while. I couldn't actually tell you how long; Marc Conant could tell you probably much better than I, or Mark Ileman. It doesn't exist now, and I don't know when it ended.

Hughes: I think the Adult Immunodeficiency Clinic, in a sense, replaced it.

D. Greenspan: With Harry Hollander. Whereas KS rounds kept its name for ages.

Hughes: KS rounds, of course, really meaning AIDS rounds?

D. Greenspan: That's right, but we didn't know about AIDS. KS existed before we used the term AIDS.

Hughes: Yes. But what I'm getting at is, once it was labeled AIDS, which was actually in the summer of 1982--

D. Greenspan: We still called it KS, because when things get a name here, it's very hard to change it.

Memories of Patients

D. Greenspan: I look back over my cases, at all the patients that I've seen over the years, all the wonderful, marvelous people who have died--the talent, the youth, the expectations--and I think what was remarkable, certainly for most of the people that I saw, was their commitment to finding out what was going on, their unbelievable optimism, and their determination to be part of whatever it would take to not only help them but help the others. So it was a question of, "I'm very optimistic; I'm going to beat this. But if I don't, whatever you can do, whatever studies are available, I want to take part in them, because they're going to help somebody else." There was an amazing unselfishness in the group of people that we followed here in San Francisco.

And I think that's important to remember, because certainly when you open the newspaper like this morning and you see that the FDA are coming under attack again for the length of time before drugs are approved, I think one has to remember that it's actually not always a selfish request, that these people don't just want to do it for their own sake, but they feel very much that they are part of an ongoing experiment, that having HIV infection makes them part of the whole, and that they want to be cured. They're still optimistic that something will come up or that they're going to beat it. Many of these people with HIV infection see themselves as part of a whole, and they want to become part of this dreadful, dreadful, dreadful experiment of nature for a cure. I think that that is absolutely remarkable.

I think the epidemic has done amazing things for people with significant, serious disease. I think the breast cancer movement, the colon cancer movement, have learned so much and have been able to become mobilized because of what gay men with HIV infection have done. So I think that this group of people has done a tremendous amount for people with disease everywhere. I think that so much has happened because of this dreadful, dreadful, dreadful epidemic. All of these people, every one in a way, many of them, have contributed to where we are today, which is a better quality of life, and in some cases slightly prolonged life, because of being in the early studies, finding out what drugs work, what drugs don't work. They may not have benefitted very much, but others are.

You see people wanting to be part of vaccine trials, people wanting to be part of drug therapy trials, drug combination trials. These are people who are doing it not only for themselves but for the greater good, and I don't think a lot of people outside of this epidemic realize that.

Cooperation amongst AIDS Researchers

Hughes: Well, something similar perhaps could be said about the investigators themselves, at least in the early days. I know there were tensions. But overall, there seems to have been an amazing amount of cooperation. How do you explain it?

D. Greenspan: I think it was two things. I think we had a patient population which really wanted to be part of the discovery, and I think we had a group of investigators who were excited, challenged, and troubled by what was going on.

Because of the nature of this city, and maybe because of the fact that this was not a nice disease, and that patients channeled themselves to small centers in the beginning, we very rapidly had a body of patients and a body of investigators who were very troubled, but who all could come together to contribute to do this. In other words, I have a feeling that it became very obviously a battleground, the disease versus everybody else, and that in those situations you had a group of people who all came together to fight this battle.

I really think the tensions and the rivalries (which I think are present in life; I don't think it matters whether it's medicine or business or wherever, they're part of life) came later. They came as one started to refine the disease, where it fell into perhaps clearer categories of what work people would be doing, and then where the obvious personal interactions came to have a bearing on what was going on.

At the beginning, it became very obvious that this disease was very new, it was exploding, and that everybody came together because they wanted to find out what was going on and how their piece fitted into the puzzle. Certainly, I think that's what happened with the mouth.

Significance of Hairy Leukoplakia

D. Greenspan: We found that hairy leukoplakia was very significant; it was evidence of an immunosuppression; it was consistent with falling CD4 count; it was consistent with increasing anergy to sensitivity testing; it was significant because of the development of an AIDS diagnosis out of an opportunistic infection or Kaposi's sarcoma. And therefore understanding it and then teaching people to recognize it was a very important part of this disease.

And then as I said, above all, providing care. Because apart from hairy leukoplakia, lots of other problems came.

We had troublesome candidiasis, nasty aphous ulcers, a very aggressive form of periodontal disease. Hairy leukoplakia was often the first thing the patients recognized. We know now, looking back, that it's one of the early markers of failing immune competence, so we know now why we saw it and why it was one of the first things we recognized, and why some of the other problems which we've now been seeing we didn't see in the early stages, in the beginning, because people hadn't been infected long enough.

CDC Includes HP in the Case Definition of HIV Infection

Hughes: Hairy leukoplakia was indeed eventually incorporated in the CDC case definition eventually, was it not?

D. Greenspan: Yes, it was incorporated in the CDC case definition of HIV infection. It was in group C, C2.

Hughes: What year?

D. Greenspan: What was the year of the first CDC?

Hughes: Well, the first CDC case definition came out in 1981, and there was a revision in 1984.[1]

D. Greenspan: I think it was included in a later classification.

Hughes: How does the CDC decide to take on another condition as part of the case definition?

D. Greenspan: Well, I think the CDC looked at the type of conditions that had been described in association with HIV infection, and then what was the etiology. So oral candidiasis and hairy leukoplakia, along with herpes simplex and herpes zoster, are evidence of reactivation. They are opportunistic infections, but they're not life-threatening. The CDC bases its data case definition on scientific data. So the number of reports of oral candidiasis, of zoster, of herpes simplex, and of hairy leukoplakia, were obviously relevant, just as were descriptions of toxoplasmosis, cryptococcoses, mycobacterium avium.

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[1] Update on acquired immune deficiency syndrome (AIDS)--United States. Morbidity and Mortality Weekly Report [MMWR] 1982, 31:507-514; Update: Acquired immunodeficiency syndrome (AIDS)--United States. MMWR 1984, 32:688-691.

More on Communication between Dentistry and Medicine

Hughes: You have said already that there were lines of communication between oral medicine and medicine, in other words, between the School of Dentistry and the School of Medicine. Do you think that the epidemic had any effect on those lines of communication? I'm wondering if dentistry was perhaps pulled closer towards medicine.

D. Greenspan: I really think that the work that our group has done, has done a lot for dentistry everywhere, when viewed by schools of medicine everywhere. In other words, I think that our work here, followed by work of other investigators in different parts of the country, has made medicine realize that dentistry is more than filling teeth. Here in dentistry, we've always known that, and also, in some areas schools of medicine have known that we do research into the etiology of oral cancer, understanding of disease that can occur in the mouth, so there have been links between dentistry and ENT [ear, nose, and throat] and dermatology.

Hughes: Was dentistry's tie to medicine widely appreciated here?

D. Greenspan: Well, it wasn't widely appreciated, because it was only really appreciated in the pockets where it occurred. Also, dentistry had not really been subject to groundbreaking research. What has happened with this dreadful epidemic is that we have been part of groundbreaking research. I think our descriptions of hairy leukoplakia and the discovery of EBV in epithelium was groundbreaking, New England Journal of Medicine research.[1] When that sort of thing happens, then

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[1] See, for example: Y. G. De Souza; D. Greenspan; J. R. Felton, et al. Localization of Epstein-Barr virus DNA in the epithelial cells of oral hairy leukoplakia by in situ hybridization of tissue sections [letter]. New England Journal of Medicine, June 8, 1989, 320(23):1559-1560; and,

J. S. Greenspan; D. Greenspan; E. T. Lennette; et al. Replication of Epstein-Barr virus within the epithelial cells of oral "hairy" leukoplakia, it's noticed. We've always been doing this sort of work, but this is something that I think made everybody sit up and notice. So it was there, but it was this discovery, being part of this pandemic, that has really made us known.

Hughes: Do you have anything to say about staging systems for HIV disease that incorporate oral disease?

D. Greenspan: Relative to HIV infection, I think the mouth is very important in staging. The mouth is simple to examine, although not everybody does a good thorough oral exam, because they're not sure what they're looking for. But if you have a group of people who can knowledgeably examine the mouth and do an oral screening, the oral lesions are very, very important, because they can be early markers or recognition early on that somebody is HIV-positive. Also, I think that they can also be markers of progression of disease. So I think they are very important markers.

The UCSF Administration and AIDS

Hughes: Did you feel that the administration here was reluctant to get involved in the epidemic? Did you find it difficult to get the support that you felt you needed to pursue research on what was eventually called AIDS?

D. Greenspan: I think that in the School of Dentistry that there was reluctance on the part of some of the faculty to treat people who were HIV-positive. But the dean, who had been Assistant Surgeon General in the Carter administration, had a very broad sense of public health and took the attitude that anybody who needed dental care would be treated in our school.

I think that at the beginning, with regards to the hospital administration, there may have been a feeling that

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an AIDS-associated lesion. New England Journal of Medicine, Dec 19, 1985, 313(25):1564-1571.

if you were dealing with AIDS or HIV infection, it would be best treated over at the General. And so there was a question of trying to separate where patients were seen; have everybody with AIDS over at the General.

Hughes: Why?

D. Greenspan: One could hypothesize that all the expertise was out at the General, all the people who were interested in AIDS were out at the General. One could also say that it was not a very nice disease, and therefore it should be out at the General. I think maybe there was a bit of both.

I think that the AIDS clinic across the street [Adult Immunodeficiency Clinic] may not have received as much support as everybody would have liked, that it was not an income-generating clinic, and that it needed a lot of support in order to be able to do its job well, and that it's been an uphill struggle to do that. But then, one has to recognize that, financially, that is true in many hospital clinics and many hospital settings, and I don't know whether that clinic was particularly different from any others.

I know it's had an uphill battle, and I know that the people who have worked there have felt that they've not received the support and the recognition from their department [Medicine] that they would have liked. There were several significant changes in the department, and maybe that had something to do with it.

But nevertheless, the clinic is up and running; it thrived. The current women's studies, the WIHS cohort under Ruth Greenblatt, has established itself there. I think that there could have been a lot more support early on, but I don't know of any situation where one actually couldn't say perhaps we would have liked more support.

Funding for AIDS Research

Hughes: Where did you find funding for the hairy leukoplakia research?

D. Greenspan: Our funding has come for those studies from the National Institute for Dental Research.

Hughes: With no problem?

D. Greenspan: Well, yes, always problem. [laughter] We put in for a program project grant, and they liked part of it, and didn't like part of it; and so you have another few months before you get funding.

Hughes: But you never felt that it was the disease per se that deterred funding?

D. Greenspan: No.

Hughes: It was the way you formatted the application?

D. Greenspan: I think the problem was that there wasn't enough expertise to review us.

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D. Greenspan: --and only one major city at that time 1985 had a strong oral component as part of their AIDS study. In fact, when we first described hairy leukoplakia, everybody said it was a San Francisco disease, because they hadn't seen it anywhere else. Then we said, "Go look."

Hughes: And did people find it?

D. Greenspan: When people with expertise in oral soft tissue diseases at that time started to look, they found it. But there were no oral people who were part of an AIDS group.

Hughes: Who did review those early grants?

D. Greenspan: They brought in people who were experts in the individual fields. So we had some AIDS expertise, some oral medicine expertise, some periodontal expertise, but not necessarily people who had both.

Hughes: The disease demanded a multidisciplinary approach. You really couldn't deal with it any other way, could you?

D. Greenspan: No. I'm not criticizing, because even if there aren't people there with expertise in both fields, you have to have a review mechanism. We were funded. We were doing the work, and we kept going.

The Oral AIDS Center, Department of Stomatology

Hughes: Give me just a brief run-through of when the Oral AIDS Center was established and why.

D. Greenspan: Well, we established it with our first funding in 1986. We had been seeing patients anyway, but what was just happening in a clinical situation actually became formulated into an Oral AIDS Center with funding, and with our ability then to bring on other people to help us. We have continued to do what we've always done, which is to see patients, provide care, collect data and ask questions. It was the funding that enabled us to get the Oral AIDS Center going, which has enabled us to be part of a multidisciplinary approach to the understanding of oral disease.

Hughes: The Oral AIDS Center is one of the functions of the ACRC?

D. Greenspan: Yes.

Hughes: But it remains in the School of Dentistry?

D. Greenspan: It's housed in the School of Dentistry, in the Department of Stomatology. The Oral AIDS Center has extended and expanded its functions from when it was first formed and the dean named us the Oral AIDS Center. We were seeing people who were HIV-positive, diagnosing and managing the oral lesions, doing our research, and teaching students and residents.

That has become expanded now with the ACRC to community outreach, where we are involved with training physicians and practitioners and examiners, from San Francisco General, from the other cohorts. We've been doing that with the San Francisco Men's Health Study and with the City Clinic Cohort. Along with the community provider AIDS training which goes on at San Francisco General, either I or one of my team go to San Francisco General about once a quarter, lecture to the providers who are coming in for training, and the trainers come and spend some time with us. That is not just for research, that is for actual training in recognizing the oral lesions, and some key tips on patient management, so that when they go back into their communities, they can take our approach.

What it actually boils down to is that usually it's a question of knowing who to pick up the phone and call. So they recognize oral lesions, they can identify the sort of problems encountered. They've worked with us, they call us, and they say, "Well, how would you approach this?" And over the phone, we can speak to different people in different parts of California, sometimes in Oregon, sometimes in Washington, and suggest lines of management. We are sometimes enabled by doing that to have the patient treated in their clinics and not have to make the journey to San Francisco. So that's one part of what we're doing.

The other part of what we're doing is collaborative research. The Oral AIDS Center, apart from what goes on that's campus-related, also has an outreach to the community and to other research protocols.

Oral AIDS Programs Elsewhere

Hughes: Is there anything like this elsewhere?

D. Greenspan: I don't think so. I think we're unique. Other hospitals in New York, Boston, Philadelphia, and perhaps elsewhere, do similar things but on a much smaller scale. Because as I said before, we are first and foremost health care providers. By nature of our interests, we become researchers; we become teachers. I nevertheless think that this campus set a great example, and our university got funding and has done a terrific job with distributing funds on the university state task force [Universitywide AIDS Research Program].

Actually in California, if you look at it, it's not a bad record. You can criticize it, you can pick holes, but I really think when I look at what has been done, what this city did, what this campus did, what the university did, it's not shabby.

The ACRC does a great job funding pilot projects. The idea is we take pilot projects; we give people money; we try and give it to people who could then use that to produce data to go and get their own funding. Sometimes we do it because there's just no way that they're going to get funding on a national scale. But it's an important thing that we, with our gut San Francisco approach to this disease, want to see done, and so we'll give money for that sort of thing. We'll give it to the community programs which would not be able to compete at a national level, because there's not a lot of money around. We forget we're dealing with not much money. People criticize money that we have for AIDS, but you've got to look at the state budget and the national budget. There's still money there, and we should be grateful.

The San Francisco Model of AIDS Care

Hughes: What is your understanding of the so-called San Francisco model of AIDS care?

D. Greenspan: Well, I think you could look at it at many levels. You could look at it as the model for providing care in a way which is physically and medically best for the patient, and financially best for the institutions. I think the San Francisco model of care has tried to show that you can provide care and look after people with minimal hospitalization time by providing very good outpatient care, and terrific care from volunteers. That may be changing.

On a broader scale, to my mind, the San Francisco model of care is what can happen when a city mobilizes itself to do the best for a group of people. When I look at the San Francisco model of care, I look at a response to a problem which was mobilized on many fronts, both state and city, hospital provider, patient volunteer, in a way that they've been able to do an extremely effective job with not very much money. So I see it in a small way as a model of care: How you keep people out of hospital, how you provide them with the best care, how you keep them at home or at a hospice if they need it, how you keep costs down, and how you keep the patient the healthiest.

Demography of the Epidemic

Hughes: Is the model working as the demography of the epidemic changes?

D. Greenspan: I think it's still working. I think it's going to be harder and harder, because I think two things are happening. One, we don't have the number of volunteers. The volunteers themselves have either become ill, or the reasons which got them involved in the first place have changed and after many years, they're burnt out. And then I think the demographics, the new infections, are changing. So I think that may well change.

Hughes: And the population with AIDS is changing.

D. Greenspan: The population is changing.

Burnout

Hughes: Has burnout been a problem in the School of Dentistry? I know it's a different sort of care than what goes on in the AIDS ward, and I'm presuming it's more sporadic.

D. Greenspan: I don't think burnout has occurred in anything like the extent that it has in the AIDS ward. I think that is also because most of us are also providing care to people who have nothing to do with AIDS or HIV infection, and also that we are not dealing with people at the end stages of their disease, for the most part. And if we do, they're small numbers, whereas many of these providers are providing for AIDS patients for a large part of their time.

Personal and Professional Impacts of the Epidemic

Hughes: What has the epidemic meant to you on a personal and professional level?

D. Greenspan: On a personal level, it has given me something to do that I believe is incredibly important, because I really feel I'm doing something to make a difference. There's always been an aspect of that in my work. I started off when I graduated doing general dentistry, and I enjoyed that. I love making beautiful crowns and the aesthetics of that. But after a few years, I wanted to do something else. Dealing with problems associated, as I talked to you earlier, with cancer and the consequences, I found I was doing something that I thought needed to be done.

I think that what's happened with working with this epidemic is that I really feel that I have done something, provided day-to-day care for the people with HIV cofactors who have oral problems. But I also think I have contributed a significant understanding of an oral lesions, including hairy leukoplakia, associated with HIV disease, which are important markers, both for presence of disease and progression of disease.

AIDS Patients

D. Greenspan: And I think apart from all the research, I have been able to provide care for a large number of people who may not otherwise have received it, because of my commitment and the commitment of those people who worked with me. So it's not just me, but that small body of us, two or three, who mainstreamed HIV care very rapidly for this school, and because of the example that this school was able to set, mainstreamed it for the rest of the country.

So I really feel that I've been able to make a difference on two grounds. But I'm not alone. You never do these things alone. But you tend to work with people who gravitate towards your approach, with your feeling, and by doing that, by working with just a very small group, we've been able to make a difference for people who are HIV positive.

I don't really like talking about it, because it makes me sound as if I've got an ego about it, and I really don't. I just think I've been lucky to have had the opportunity to do something which makes it really good for me to get up in the morning. And if I have a break in my voice, it's because just sometimes I think about all the wonderful people who have died--[voice breaks]. [tape interruption] I just think about all the wonderful people who have become tragedies--[voice breaks]--from all walks of life, from all backgrounds: from the young, frightened youths, to a wonderful lawyer who'd been in the Harvard Law Review, had been out here two years with an incredibly promising career, to young women, children. As I speak, I put a name and a face to all of these people, and if in any way I have made things better for them, then I think I've been very lucky.

It's like the book that was reviewed in the New York Times last week, written by an Indian doctor about his experience with AIDS patients.[1] I thought the review that Perri Klass wrote was wonderful. The doctor worked in a community where he saw a small number of people with AIDS, and where each one had an incredible story, and which made a terrific impact on him, but he gave up. He's gone back to writing. I think all of us here have our stories about people whose lives have touched us. I still stay in contact with some of the dear ones, and volunteers of the dear ones they've looked after, patients I've seen, and we talk from time to time.

Miraculously, I still have an orchid that was given to me after a particular person died. I'm not good with indoor orchids, but this one has just flowered again. I look at it, and I think of him. It's a sobering experience, maybe for anybody who deals with this disease.

---

[1] Abraham Verghese. My Own Country: A Doctor's Story of a Town and Its People in the Age of AIDS. New York: Simon and Schuster, 1994; Review by Perri Klass. AIDS in the Heartland. New York Times Review of Books, August 28, 1994, 1, 19-20.

There's also been an incredible period of ups and downs, of excitements and disappointments, but that's true, I think, in any cutting-edge disease or project that you're involved in. [tape interruption]

Colleagues

D. Greenspan: One thing I would like to add, because we've talked a lot about what I feel and what I've done; we've talked about the patients, and we've talked about the problems. What I think for me has also been very important is the terrific people I've worked with, a few names I mentioned earlier. Whenever we had a problem, whenever I had a research idea, I would go and talk to Jay Levy or one of his group, or to Don [Abrams] or Marc [Conant] or Connie [Wofsy] or any of those people, who were just unbelievably supportive: "What can I do? When do you want it by? Let's do it." Just a tremendously wonderful group of people to work with.

You may ask what's the San Francisco model. There are some very wonderful people here, and those people have made what we have all done here possible, because of the collaborations and the support and the friendship that has come from this. I just wanted to say that, to me, is a very important piece of all of that. [tape interruption]

International Conferences on AIDS

D. Greenspan: I think what was important in a way for this recent AIDS meeting [Tenth International Conference on AIDS, Yokohama, June 1994], when there were a very small number of people present compared with previous meetings (I think maximum 5,000, and maybe only at any one time about 3,500 actual researchers around), is that it gave everybody a chance to come together and talk about problems and approaches. It reminded me of the first meeting in Washington [Third

International Conference on AIDS, 1987]. I think there were 2,000, and that convention center was full. There were more people than they expected. There was a tremendous amount of, "What's going on? What can we do? How can we solve it?" People who hadn't met before from different parts of the country and world came together and said, "Let's look at this; let's try that." That was a very important part of that first meeting, and it was good to see that happen again in 1994. I think we need to remember that if we're going to have a good scientific meeting. It is not just for presenting to the press; it's not just to be seen. It is also the relationships that develop as a result of those meetings.

I remember sitting in the auditorium at the Atlanta meeting when Margaret Heckler said that we'd have a vaccine within a very small number of years, and sitting close to me were several people who would be interested in vaccine development and descriptions of the virus. I remember hearing their comments in my ear. I think that we lose that if we have these very huge AIDS meetings. That very first meeting with Margaret Heckler I think brought us together and established connections which hadn't existed before.

Then we went on to the Paris meeting [Second International Conference on AIDS, 1986], and then back to the Washington meeting [Third International Conference on AIDS, 1987]. I think it was at the Washington meeting that we realized how political we'd become. Although there was a political element at the beginning because of funding for AIDS, government recognition of AIDS, I think politically we became truly polarized at the Washington meeting in 1987, when the policemen ran around in rubber gloves, even though they had nothing to do. [laughter]

Hughes: Well, thank you.

Transcribed by Shannon Page
Final typed by Celeste Newbrough

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Berkeley, California

The San Francisco AIDS Oral History Series

THE AIDS EPIDEMIC IN SAN FRANCISCO: THE MEDICAL RESPONSE, 1981-1984

Volume VI

John S. Greenspan, BDS, PhD, FRCPath

AIDS SPECIMEN BANK, UCSF

Interviews Conducted by
Sally Smith Hughes
in 1994

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John S. Greenspan, late 1993.

INTERVIEW WITH JOHN S. GREENSPAN, BDS, PhD, FRCPath

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INTERVIEW HISTORY--John S. Greenspan

John Greenspan and his wife Deborah, whose oral history appears in this volume, were interviewed as representatives of the UCSF School of Dentistry's role in responding to the AIDS epidemic in San Francisco. Their inclusion in the series potentially problematizes its title, namely the medical response to the AIDS epidemic in San Francisco. However, upon reading the two oral histories, one will see that in the case of the two Greenspans, the distinction between the two fields is somewhat blurred. The problems in AIDS research which they individually and collectively addressed as colleagues in the UCSF Department of Stomatology were and are of interest in both medicine and dentistry.

John Greenspan was drawn into AIDS research through a biopsy specimen, which was sent to him as UCSF's oral pathologist for diagnosis. Greenspan diagnosed lymphoma, a cancer of the lymphoid tissues. This event occurred in the summer of 1981 when the first cases of a new disease later to be named "AIDS" were beginning to be recognized at UCSF and isolated centers elsewhere. In the habit of going to dermatology rounds whenever he could, Greenspan knew about the cases of Kaposi's sarcoma in gay men being reported in San Francisco. In the oral history, Greenspan tells what occurred to him next:

> I connected what I was seeing, a lymphoma in a young man, with two things. I connected it with the lymphomas that we saw and are seeing in immunosuppressed transplant recipients, and I connected that with what was obviously the immunodeficiency of the gay men with *Pneumocystis carinii* pneumonia and Kaposi's sarcoma. I connected it in my mind, and I called Bill Chan, the oral surgeon [who had sent him the lymphoma biopsy material]. I said, "Is this patient by any chance homosexual?" He said, "I'll find out." He called me back and said, "As a matter of fact, he is." I said, "Well, I think it's probably the same story as the Kaposi's sarcoma and *Pneumocystis*." That was our first lymphoma.

This episode marks the beginning of Greenspan's involvement at several levels with the new epidemic.

Recognizing the opportunities that the epidemic presented to him personally as well as for biomedical research, Greenspan soon became the self-appointed doyen of the AIDS specimen bank. At first an informal operation set up to support local AIDS researchers, it soon became, as Greenspan describes in the oral history, a complex operation with state funding and its own advisory board. John Ziegler, who as former director of a tumor bank in Uganda was in a position to know, commented admiringly that Greenspan ran it "like Chase Manhattan Bank."[1]

Greenspan also tells of his work with Deborah Greenspan and others on the virology of hairy leukoplakia, an oral lesion whose status as an AIDS-defining condition is still debated. What is clear from this and other oral histories in this series is that the presence of such lesions, as well as other oral manifestations such as candidiasis, alerted clinical staff at UCSF, San Francisco General Hospital, and elsewhere in San Francisco to the possibility that the patient had AIDS.

Both implicit and explicit in this oral history is the collaboration of the Greenspans and others in the School of Dentistry with physicians in the School of Medicine. The epidemic provided an impetus for Greenspan's interest in forging closer ties between medicine and dentistry at UCSF, an early manifestation of a liaison which has since occurred at other institutions. The other oral histories in this series describe the multispecialty response which the AIDS epidemic engendered within the field of medicine. This present oral history gives primacy to its interdisciplinary (medicine and dentistry) aspect. Greenspan does not claim that this relationship at UCSF was unique but he might not be reluctant to place the UCSF School of Dentistry (and hence the Greenspans) at the forefront of such interactions.

The Oral History Process

The interviewer initially met John Greenspan on March 24, 1994, in his office in the Department of Stomatology of which he is currently chairman to discuss archival research to prepare for the oral history. Consulting a list in his possession, Dr. Greenspan arranged for cartons of documents related to AIDS to be retrieved from storage at an off-campus university site. As the reader will see in the footnotes, the papers were a particularly rich source in respect to the specimen bank which Greenspan has directed since 1982. We met again on June 29 to begin the first interview. Subsequent interviews occurred on August 2 and August 29, 1994. Outgoing and self-assured, Greenspan responded readily to questioning, but for press of time, curtailed the final interview.

The edited transcripts were sent to Dr. Greenspan, who edited them lightly and returned them promptly. This oral history provides further evidence of the epidemic's stimulatory effect on interdisciplinary health care practices and on the creation of new medical and dental services.

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[1] Oral history in this series with John L. Ziegler.

The Regional Oral History Office was established in 1954 to augment through tape-recorded memoirs the Library's materials on the history of California and the West. Copies of all interviews are available for research use in The Bancroft Library and in the UCLA Department of Special Collections. The office is under the direction of Willa K. Baum, Division Head, and the administrative direction of Charles B. Faulhaber, James D. Hart Director of The Bancroft Library, University of California, Berkeley.

Sally Smith Hughes, Ph.D.
Research Historian and Principal Editor

July 1998
Berkeley, California

Regional Oral History Office
Room 486 The Bancroft Library

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BIOGRAPHICAL INFORMATION

(Please write clearly. Use black ink.)

Your full name John Simon Greenspan

Date of birth January 7, 1938 Birthplace London, UK

Father's full name Nathan Greenspan

Occupation Grocer Birthplace London

Mother's full name Jessie Dion

Occupation Grocer Birthplace London

Your spouse Deborah Greenspan

Your children Nicholas James (1966)

Louise Catherine (1969)

Where did you grow up? London and Essex, UK

Present community Tiburon, California

Education BSc 1959, BDS 1963, PhD 1967 University of London

MRCPath 1971, FRCPath 1983

Occupation(s) Professor|Dentist

Areas of expertise Pathology, virology, and immunology

Other interests or activities Skiing, gardening, wine, and travel

Organizations in which you are active American Association for Dental Research (President 1988-89). International Association for Dental Research (President 1996-97). American Association for the Advancement of Science (Chair, Dentistry Section 1991-92). International AIDS Society, etc.

INTERVIEW WITH JOHN S. GREENSPAN, BDS, PhD, FRCPath

I EDUCATION AND EARLY CAREER[1]

[Interview 1: June 29, 1994, School of Dentistry, UCSF] ##[2]

Hughes: Please give me a thumbnail sketch of yourself, starting with where you were born and educated.

J. Greenspan: I was born in East London just before the war, and brought up during the war in London and out in the country. You've probably heard about children being evacuated. After the war, we settled in a distant suburb, a little village in Essex outside London called Upminster, actually not far from where William Penn's father had his property in Cranham.

I went to school in local grade schools and then to a local grammar school not far away in the town of Romford. And then in about 1952, I think, the year that King George VI died, we moved to a northern suburb of London, Golders Green. Then I went to school, a co-ed school, as a matter of fact. And from there to dental school at the University of London [Royal Dental Hospital of London, School of Dental Surgery]. I did what we called an intercalated B.Sc. [Bachelor of Science degree] and B.D.S. [Bachelor of Dental Science degree] in the middle of my dental education [1956-1962], which meant I did a six-year curriculum instead of the usual four-year dental curriculum. I did an anatomy bachelor's degree [B.Sc., 1959], did well in that, and after graduation from dental school [1963], went on to a joint training program in oral pathology and histochemistry/cell biology, partly at the London Royal Postgraduate Medical School at the Hammersmith Hospital; did my Ph.D [1967]. Then I finished my general and oral pathology training so that I finished my training altogether in about 1971. I became an Senior Lecturer/Consultant [1968-1972] at the school [Royal Dental Hospital] where I was originally trained.

---

[1] For better chronology, this section was moved from session two.

[2] ## This symbol indicates a tape or tape segment has begun or ended. A guide to the tapes follows the transcript.

The year after I got that appointment, I went on the British equivalent of a sabbatical and came here to San Francisco for a year [1972-1973] as an associate professor of oral pathology and pathology, and liked the place very much and fitted in very well. My wife [Deborah Greenspan][1] and I went back home with our family, and three years later, they recruited me back here as a professor in 1976. I came back as an oral pathologist, became the founding chairman of our Division of Oral Biology [1981-1989], and when AIDS came along, got very heavily involved in AIDS. I became the founding director of the [UCSF AIDS] specimen bank [1982-present], meanwhile building my own division in the dental school. In 1988, I became chairman of the Department of Stomatology, and in 1992, I became director of the AIDS Clinical Research Center.

---

[1] See the oral history with Deborah Greenspan, D.Sc., in this volume.

II THE AIDS EPIDEMIC

Encountering the Epidemic

Hughes: I understand that you first learned of the epidemic in the summer of 1981 at a case presentation by Marcus Conant[1] on Kaposi's sarcoma. Why did you go to the presentation?

J. Greenspan: I was in the habit of going to dermatology rounds whenever I could. Dermatology is very near in terms of the scope, the topics of interest, the methods of investigation, and the problems, to my own field of oral pathology and oral medicine. Oral pathology and oral medicine are in some respects dermatology of the mouth, if you like. So dermatology rounds were, and continue to be whenever I can, a part of what I do. So there was that. Then in addition, one had read about the Kaposi's sarcoma cases in the newspapers, heard it on television. There was a lot of talk on campus about it. This was the first presentation on campus at UCSF [University of California, San Francisco] about this new event. It was obviously very exciting.

Hughes: Do you remember when that was?

J. Greenspan: Not exactly. We could probably get it from Marc's records.

Hughes: Was it before the MMWR?[2]

---

[1] See the oral history with Marcus A. Conant, M.D. in the series, The AIDS Epidemic in San Francisco: The Medical Response, Regional Oral History Office, The Bancroft Library. Hereafter, this series.

[2] Kaposi's sarcoma and Pneumocystis pneumonia among homosexual men--New York City and California. Morbidity and Mortality Weekly Report, July 3,1981, 30:305-307.

J. Greenspan: No, it was just after, or about the same time. Could have been within a couple or three weeks.

It was very exciting. There was an old-time dermatologist, highly respected. He's a man, but his name was Marion Sulzberger. I remember at the end, we were all asking, "How is it that there is an outbreak of Kaposi's sarcoma among gay men?" I remember him saying, "Well, there have been young homosexual men, sexually energetic young men around for millennia. What is it new that has happened? They must be passing something from one to another." That means that at the very first talk that I heard, given by Marc, someone raised the notion of an infectious agent.

Within a few days or weeks of that, I remember beginning to see Kaposi's sarcoma biopsies in the oral pathology biopsy service, of which I am one of the attendings. I remember walking along the corridor and running into the then-chairman of the Department of Pathology in the School of Medicine, Ed Smukler, who subsequently died, and saying, "Well, Ed, have you seen any of these Kaposi's sarcoma cases? Have you ever seen it before?" We exchanged a few words about it, and he said, "Well, they must be passing something around between them." So right from the beginning, there was the notion of an infectious agent.

AIDS-associated Lymphoma

First Cases in the Dental School

J. Greenspan: Then, later that summer [1981], and I can't pin it down precisely; it was my turn on the oral pathology service. I was reading the biopsies that day. One of our oral surgeons, Bill Chan, who had been trained here and was in fact a part-time faculty member, had sent a biopsy in of a nodule in the mouth of a patient. I looked at it, and it was a very obvious Burkitt's-type lymphoma, with starry-sky macrophages. I looked at it, and it was [from] a young man.

I connected what I was seeing, a lymphoma in a young man, with two things. I connected it with the lymphomas that we saw and are seeing in immunosuppressed transplant recipients, and I connected that with what was obviously the immunodeficiency of the gay men with Pneumocystis carinii pneumonia and Kaposi's sarcoma. Kidney transplant patients also get Kaposi's sarcoma. I connected it in my mind, and I called Bill Chan, the oral surgeon. I said, "Is this patient by any chance homosexual?" He said, "I'll find out." He called me back and said, "As a matter of fact, he is." I said, "Well, I think it's probably the same story as the Kaposi's sarcoma and Pneumocystis." That was our first lymphoma.

Hughes: When did the immunodeficiency come into the picture?

J. Greenspan: We realized from the very beginning that the young men had Pneumocystis carinii and were dying, and we knew that Pneumocystis carinii only affected very immunosuppressed people, babies with primary immunodeficiency, people with leukemia and with chemotherapy and so on. So there was no question that there was immunosuppression, and in fact I think that was mentioned in the New England [Journal of Medicine] articles which came out around about that time.[1] Oral candidiasis was a feature; we associated that with immunodeficiency.

And in fact, the first name, if you remember, within weeks of the MMWR reports, was GRID: gay-related immunodeficiency, I think is what it stood for. So the notion of immunodeficiency was very much in the forefront of one's mind.

So having seen that lymphoma, I spoke to a couple of people, and very shortly thereafter--again, I can't remember exactly when--we got our second case of lymphoma in oral pathology, this time a patient seen by our clinicians in the clinic, Dr. [Sol] Silverman and Dr. Deborah Greenspan. The biopsy was the same. So we decided this was worth reporting [See footnotes 2, 3, and 4 on page 6].

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[1] See, for example: H. Masur, M.A. Michelis, et al. An outbreak of community-acquired Pneumocystis carinii pneumonia: Initial manifestation of cellular immune dysfunction. New England Journal of Medicine, 1981, 305:1431-1438.

Formation of an Informal Lymphoma Group

J. Greenspan: As it happened, at about that time, John Ziegler[1] had come to this campus from the National Cancer Institute, where he had been the associate director of the NCI and the editor of the Journal of the National Cancer Institute. He had at about that time published a nice review article on Burkitt's lymphoma in immunodeficiency.[2]

So having heard that John Ziegler was on campus, and having seen that article, I called him and said, "We'd like to bring you into this study of these new lymphomas." He said, "That's very interesting, because actually there are some other lymphomas." We put together four. He got together a group of us to talk about these lymphomas--Ed Sillitoe, John Ziegler, Evelyne Lennette, who is an EBV [Epstein-Barr virus] biologist, Larry Drew over at Mt. Zion [Medical Center]. It became really a nucleus of our AIDS group here.

We met a few times, and we did some more studies on these four lymphomas. We quickly got it into MMWR,[3] so you can pinpoint it from when that was published. That was the very first presentation anywhere of lymphoma in association with AIDS.

We followed it up with a small paper, preliminary communication, in Lancet.[4] Then John took that and built a much bigger paper which was published in the New England Journal a year or so after[5], which didn't have all our names on it--that was fine, it was a much bigger series of patients.

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[1] See the oral history with John L. Ziegler, M.D., in this series.

[2] J. L. Ziegler. Medical progress. Burkitt's lymphoma. New England Journal of Medicine, 1981, 305:735-45.

[3] Centers for Disease Control. Diffuse, undifferentiated non-Hodgkins lymphoma among homosexual males--United States. Morbidity and Mortality Weekly Report [MMWR], June 4, 1982, 31(21):277-279.

[4] J. L. Ziegler, W. L. Drew, R. C. Miner, et al. Outbreak of Burkitt's-like lymphoma in homosexual men. Lancet, Sept. 18, 1982, 2(8299):631-633.

[5] J.L. Ziegler, J.H. Beckstead, et al. Non-Hodgkin's lymphoma in 90 homosexual men. Relationship to generalized lymphadenopathy and acquired immunodeficiency syndrome. New England Journal of Medicine, 1984, 311:565-70.

So I got into AIDS really through the lymphoma story.

M. Antony Epstein and Yvonne Barr

Hughes: You had had previous experience with lymphoma?

J. Greenspan: Only as a pathologist. Actually the story is a bit more interesting than that. As a trainee oral pathologist in London in I think 1967, I was in the habit of walking from my office at the Royal Dental Hospital in Leicester Square to the Middlesex Hospital. In those days, there were lots of hospitals in central London, and I went to the Middlesex quite frequently to spend time with pathologists there, and also with the immunologists.

I happened to notice on the announcement board a small typewritten notice saying that Dr. [M. Antony] Epstein, who was a pathologist there, would be giving a talk on the lymphomas from Africa that [Denis] Burkitt had been sending him, and they had just discovered the virus. So I actually heard the seminar that Tony Epstein gave, where Epstein-Barr virus, the virus associated with Burkitt's, was announced. It caught my imagination.

Well, there's a very interesting circle to this. Tony Epstein discovered Epstein-Barr virus in Burkitt's lymphoma. So you may ask, who is Barr? Well, Barr was his (British-style) technician; she was what we in the States would call a graduate student. She was doing her Ph.D. Her name was Yvonne Barr, and she was his technician. She was the person who actually discovered the virus. She subsequently finished her Ph.D., left his lab, got married and went to Australia; became a schoolteacher. Well, Yvonne Barr's sister is married to a member of the faculty of the dental school, to Ib Nielsen, who's an orthodontist.

The only other way in which one was familiar with this story was that as a trainee pathologist in the sixties, I might well have run into the relationship between the immune system and disease, and my own research interests were in immunology as related to oral disease. I was very interested in Burkitt's lymphoma, because it expresses itself in the mouth preferentially and before elsewhere. It doesn't form in lymph nodes; it forms in tissues of the mouth, and one wondered whether it didn't in fact start there. So the whole Burkitt's lymphoma story was a theme for me. Yes, I would say so.

Hughes: But not Kaposi's.

J. Greenspan: No.

Hughes: Had you seen any Kaposi's?

J. Greenspan: I'd seen maybe two or three cases of Kaposi's in other people's study sets, and I think I had been involved in diagnosing one case in my entire career. It was very rare.

Hughes: Do you have any memories of the first patients?

J. Greenspan: Yes, I do. I remember walking into the clinic and seeing my wife, Deborah, and the other oral medicine clinic clinicians attending to very cachectic young men, very sick-looking young men, who had Kaposi's sarcoma on the face and multiple furunculosis and other skin lesions. I remember consulting on some of those. I remember consulting on the first lymphoma case. But I don't have the dates in my mind. I didn't write them down.

Infection Control

In Dentistry

Hughes: Since the idea of an infectious agent was floating around from the very start, was there any fear involved with dealing with these patients?

J. Greenspan: A little bit. We didn't think a lot about infection control in dentistry in those days.

Hughes: Why?

J. Greenspan: Denial. The clinic here was rather remarkable in that at least we wore gloves when we were doing biopsies. In England when I trained, we did oral surgery, including biopsies and extraction of third molars, without any gloves. That was just universal in dentistry, and it hasn't changed everywhere, you know.

Hughes: Was that because one is more dexterous without gloves?

J. Greenspan: That was the notion, yes. It just hadn't occurred to people. There was no excuse, because in the mid-seventies, it became very clear from studies in this country, particularly those in which the CDC [Centers for Disease Control] and the ADA [American Dental Association] collaborated, that there were a number of outbreaks of hepatitis B--well, it was called serum jaundice or infectious hepatitis to start with, and then the hepatitis B virus was discovered--among the patients of oral surgeons and dentists. As soon as the virus was discovered, the antibody levels and the antigen were examined, and it was very clear that there had been transmission--seven, eight, nine, ten clusters of that.

The ADA issued quite clear recommendations around 1976, I believe, indicating that it was time to introduce appropriate and rational infection control in dentistry. And in fact, we had a faculty member here in those days (she subsequently retired), Valerie Hearst, who argued strongly that dentists should wear gloves, that everything should be properly sterilized, there should be separation of patient material from other patient material, and everybody laughed at her. She was really more or less treated as a crank. So when AIDS came along, we were still in that mind set. We really weren't thinking in terms of occupational hazards very much.

Hughes: The reason being that people considered safety measures unnecessary?

J. Greenspan: Well, as I say, I think it was two things. I think it was partly ignorance. The facts about hepatitis hadn't filtered through. And partly denial, I think. Like smoking. Same story. That's my impression.

School of Dentistry[1]

J. Greenspan: In the School of Dentistry, I think under Dean John Greene's leadership and mostly at the prodding of Deborah Greenspan, and me perhaps secondary in that role, we've really led the way in terms of rational infection control and treating patients in the context of their medical history and so on. But to be fair, that was built on a generation of a medically oriented approach to oral diseases here. It had been pioneered by others, including Herman Bechs in the 1940s and 1950s, and Sol Silverman in the 1960s and early 1970s.

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[1] The following discussion includes some excerpts from later in this interview.

Hughes: Since we're on to infection control, why don't you say a little more and be a bit more specific about the changes that I am presuming you attribute to the epidemic. What sorts of things did you do as a result?

J. Greenspan: Well, let me just try and think. Prior to the AIDS story, we were wearing gloves in our clinics for surgical procedures, doing biopsies. Some time during the AIDS story, and I don't remember when, and I'm not even sure I can find out, we started to wear gloves and masks for those patients. And then later, we started to wear gloves and masks for all patients, and then developed a full infection control protocol for all patients.

Official Infection Control Guidelines

Hughes: Your group at UCSF? This wasn't a nationwide campaign?

J. Greenspan: People did things differently in different places.

Hughes: But it was not an ADA mandate?

J. Greenspan: Well, it did build into an ADA mandate some time in the late eighties, yes. And the CDC got into the act, as you know, with recommendations on infection control. They called it the avoidance of occupational transmission in health care, and at first, it was everything in health care. The CDC recommendations included dentistry, and later they had some recommendations specifically for dentistry. It's all in the MMWR.[1]

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[1] Acquired immune deficiency syndrome (AIDS): Precautions for clinical and laboratory staffs. Morbidity and Mortality Weekly Report, 1982, 31:577-579.

Hughes: Is the 1983 paper by Conte and Sande in the New England Journal the start of this train of thought?[1]

J. Greenspan: It was at about the start of it, but they certainly didn't contribute specifically to what we were doing. It was a reflection of a climate of opinion which they documented rather nicely. It was recommendations from Conte's hospital committee [UCSF AIDS Task Force, now the UCSF AIDS Coordinating Council].

Hughes: Exactly.

J. Greenspan: Now, interestingly enough, the School of Dentistry was not involved in that in any way. We only became involved when the chancellor [Julius Krevans] established the chancellor's AIDS advisory council [UCSF AIDS Coordinating Council], which was a little after that [July 1988].

Hughes: Why wouldn't the School of Dentistry have been involved?

J. Greenspan: Because we operate our clinics independently of the hospitals. The School of Dentistry runs its own clinics, and we don't come under them. Only more recently have we started to work with them to become part of a broader system.

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J. Greenspan: John Conte was hospital infection control officer for [UCSF at] Parnassus, and Sande ran that side of things at the General.

Hughes: Am I to gather that what they were doing was not having any particular impact on dentistry at that point?

J. Greenspan: Well, only insofar as we talked to each other informally. We were all involved in the study club [Kaposi's sarcoma study group],[2] and we were aware of what the thinking was about this being due to a contagious agent, as HIV became. So there was a general climate favoring infection control--

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[1] J. E. Conte, W. K. Hadley, et al. Infection-control guidelines for patients with the acquired immunodeficiency syndrome (AIDS). New England Journal of Medicine, 1983, 309:740-744.

[2] For further information on the Kaposi's sarcoma study group, see the oral histories in this series with Merle Sande, M.D. and Paul Volberding, M.D.

and often that's the way it is with behavioral change and with science. It's not the formal things. The formal things often follow reality. The reality is the corridor chat and the networking, and picking up the phone, "What are you doing?" and asking the patients, "What does Dr. Sande do, and Dr. Volberding?"

So we were part of the UCSF climate of opinion. A lot of it was what we call by osmosis, by being around these people. Things later became formalized when we established the infection control committees and AIDS advisory committees and became consultants of the CDC and the ADA.

More on the UCSF School of Dentistry

J. Greenspan: I was on the Council on Dental Research of the ADA at about that time--when did I go on that? [looks through papers] Oh, no, I didn't go on that until 1987. That was quite late; interesting. But we got involved in the national scene as informal consultants or as actual consultants. We adopted from the very beginning the notion of universal precautions. We fought, and still fight, the notion--the current exception is TB--that patients who were identified with hepatitis or HIV should be handled in a different fashion from any others, because you could never tell who was and who wasn't infected. TB has mixed that up a little bit, of course, because the open pulmonary TB case who is coughing is a different infection control hazard.

Hughes: And what do you do about that?

J. Greenspan: We haven't had many [TB] patients, but we're grappling with it. We have a very clear policy, which is that anybody who has a cough of unknown origin or who is known to have tuberculosis that isn't controlled with medication, that only dental treatment of the most emergency type is provided, and there with very significant precautions in terms of the operator, respirator masks and so on. That's been a break in our approach. But otherwise, we've been very vociferous, and applied in our own clinics and sometimes against the continuing opposition of our colleagues, the notion that HIV patients are treated like everyone else.

Hughes: Is compliance pretty good, and what do you do if it's not?

J. Greenspan: There have been some data on that. On the national scene, the level of knowledge of what the appropriate precautions are is now quite high. It's gone up over the years from 5 or 10 percent to probably 80 or 90 percent. The level of reported appropriate behavior has gone up as well. It's never as high as the level of knowledge; if the knowledge is 80 percent, reported behavior might be 60, 70 percent. Observed behavior is much lower. Actual compliance is not that great. OSHA [Occupational Safety and Health Administration] has got into the act and is coming around and looking at the way dentists do their infection control. But OSHA's job is to protect the health of the employees, not patients, not the employer dentists.

But infection control is getting much better. It's unbelievably improved compared with ten years ago, and it is the best in the world. But if you're asking me what the rate of 100 percent compliance is, the data are that it's not a very high proportion of practices. But it seems to be working anecdotally. Since dentists have been wearing masks, the number of upper respiratory infections has fallen off. I think there may even be some data on that. The rate of increase of hepatitis antigen positivity among dentists and dental hygienists has leveled off. So it is helping.

The Kimberly Bergalis Case

Hughes: How does the Bergalis case factor into this?

J. Greenspan: I think that was the stimulus. I don't think it was AIDS in general, I think it was the Florida cluster in particular that stimulated most of this--public panic and horror, and antagonism towards dentistry. Dentists' fear of acquiring the infection themselves or destroying their practices. And then more legislative approaches with first of all ADA recommendations, then CDA [California Dental Association] recommendations, and federal OSHA and even congressional action that required states to have a program for the prevention of occupational transmission.

It went much too far. It became a witch hunt. There's very little evidence really, when it comes down to it, that HIV is transmitted in any form of clinical practice, other than by a needle stick. The notion that it can be transmitted in the way that it is claimed it was transmitted in the Bergalis case is pretty tenuous, and there haven't been any other examples. As you know, the Florida cluster has been questioned even recently.

Hughes: Yes.

J. Greenspan: The molecular biology upon which it's based has been challenged.

AIDS Case Definition and Risk Groups

Hughes: Did the early case definition of AIDS, promulgated by the CDC, fit with what you were seeing in dentistry?

J. Greenspan: I think it helped a lot. It gave the disease a name. It defined the most extreme form of the disease. Since HIV had not yet been discovered, it did give us a matrix for our thinking. I think it also in some respects was a barrier, or a hindrance, to the intellectual process, because we grappled for years with the definitional issues concerning AIDS and ARC [AIDS-related complex] and people who were in that risk group. It wasn't really until a number of years after HIV had been discovered and all the tests were available that we really rationalized the whole thing and thought of it as a spectrum, a continuum, of HIV infection and its consequences, of which what we used to call AIDS is merely the end stage. I think that original definition in fact got in the way in some respects. It certainly got in the way in terms of provision of care to people whose illness just happened not to come under what turned out to be a rather arbitrary definition.

Hughes: What about the original four risk groups, the four H's [hemophiliacs, heroin-users, Haitians, and homosexuals]? Was that restrictive as well?

J. Greenspan: Yes. Well, at first again it helped, because it focused everybody's attention on those groups who in those days we needed to be looking at and thinking about when they came through with pathology. But it also stigmatized those with what we subsequently came to think of as HIV infection as being marginalized groups, or having brought things on themselves. And I don't think it's past tense. I think it's true to say it did get in the way of rational and compassionate approaches, but I think it still does in many parts of the world; it's still a stigmatized condition.

Hughes: How pat was the definition? Or better yet, how malleable was it? Even though there were x number of opportunistic infections associated with AIDS, was there the mindset that there could be more, so that you would not be circumscribed to thinking of this syndrome strictly in terms of the opportunistic infections which had already been defined?

J. Greenspan: Well, I think there was a rigidity introduced by the definition. To be fair, it has stood the test of time. After all, even with the modification of January 1, 1993,[1] all we did was tinker. We added anogenital papilloma virus infection and nonspecific genital infection in women, and we added TB. The rest of it really was tinkering with using the CD4 count and HIV antibody status per se. Those were part of the notion that it was HIV infection we were dealing with. But in terms of AIDS itself, the end stage, it stood the test of time pretty well. It added the cachexia, the slim disease aspects in Africa, and obviously in the Third World, there are other opportunistic pathogens. But I would say to be fair, the end stage definition and the range of opportunistic infections have withstood the test of time.

Nevertheless, they introduced a rigidity, and we spent an unnecessary and wasteful amount of time convincing ourselves and others that there was a broader spectrum of opportunistic infections, of which the oral lesions are a spectacular example.

Hughes: Well, that's precisely what I was thinking of.

J. Greenspan: And much of our work has been doing that very thing.

Hughes: Well, I don't want to get into the hairy leukoplakia [HL] story just yet. But let's bring it up only in this context, and that is, this was a condition that did not fall within the original definition of AIDS.

J. Greenspan: Correct.

Hughes: Was there resistance to accepting it as diagnostic of AIDS?

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[1] Centers for Disease Control. 1993 revised classification system for HIV infection and expanded surveillance case definition for AIDS among adolescents and adults. MMWR 1992, 41:961-962.

J. Greenspan: Oh, absolutely. If you look at the early descriptions, the candidiasis paper in the New England Journal,[1] which is the very first description, and then soon after that other papers showing that people with oral candidiasis developed AIDS--there was a paper by Murray and Klein[2]--it's likely retrospectively that half of those cases probably were hairy leukoplakia, and we have never been able to get those authors to accept that publicly. People were very resistant to the idea that there was a new disease, new lesion, that had never been described before, and that it was biologically different from oral candidiasis, another white lesion, and that it was of independent significance. But I think that's all worked out now. When we talk about HL, I'll come back to that.

Walter Reed Staging System for AIDS

J. Greenspan: The Walter Reed classification is another example where oral candidiasis was included, but because HL hadn't been discovered, Robert Redfield didn't put HL into the original Walter Reed classification, and has always resisted accepting it, whereas the other staging systems do recognize a broader spectrum.

Hughes: What is the Walter Reed staging system?

J. Greenspan: The Walter Reed staging system is the one developed by the army for HIV infection. It was the first staging system; it was the first transition from the notion of AIDS, with maybe ARC being somehow connected, into the notion it was a continuum of HIV infection with declining CD4 counts, and first nonfatal and then fatal opportunistic infections.

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[1] M. Joy, Oral candidiasis and AIDS [letter]. New England Journal of Medicine, Nov. 22 1984, 311(21):1378-1379.

Also: M. S. Gottlieb, R. Schroff, H. M. Schanker et al. Pneumocystis carinii pneumonia and mucosal candidiasis in previously health homosexual men: evidence of a new acquired cellular immunodeficiency. New England Journal of Medicine, Dec. 10 1981, 305(24):1425-1431.

[2] R. S. Klein, C. A. Harris, C. B. Small et al. Oral candidiasis in high-risk patients as the initial manifestation of the acquired immunodeficiency syndrome. New England Journal of Medicine, August 9, 1984, 311(6):354-358.

Hughes: And that was Redfield's staging system?

J. Greenspan: Yes. New England Journal of Medicine.[1]

Hughes: What year?

J. Greenspan: I don't remember. I would say probably about the same time as hairy leukoplakia was announced, about 1985, I think. [see footnote 1]

Hughes: So after the virus?

J. Greenspan: After the virus, yes.

Hughes: Was that staging system important?

J. Greenspan: Yes, very important. Flawed, but very important.

Hughes: How was it flawed?

J. Greenspan: Well, it turned out subsequently not to be quite as accurate a depiction of the natural history as one would want, and again therefore it started to get in the way a little bit.

Hughes: But its value was the idea of a continuum?

J. Greenspan: Yes.

Hughes: That was a new notion?

J. Greenspan: Yes. And it was supplanted or supplemented quickly by the new CDC classification of about 1985 or 1986[2] with Roman numerals I through IV, and then categories A through D, if you remember, which was very helpful. But again, typical CDC, separate things, separate slots, pigeonholes, which people didn't always fit into, and from one of which to another they moved. So I think the 1993 January 1 definition is a much more dynamic and much more realistic reflection of natural history.[1]

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[1] R. R. Redfield, D. C. Wright, and E. C. Tremont. The Walter Reed staging classification for HTLV-III/LAV infection. New England Journal of Medicine, Jan. 1986, 314(2):131-132.

[2] Centers for Disease Control. Revision of the case definition of acquired immunodeficiency syndrome for national reporting--United States. Morbidity and Mortality Weekly Report, 1985, 34:373-75.

But all of things are inevitable stages in the development of understanding of any disease. Most diseases, it takes 100 or 1,000 years, and in AIDS we've gone through all of those phases in ten or twelve years. To be fair.

Hughes: CDC was simply operating in tried and true fashion? It couldn't have been expected to do anything but put people in categories?

J. Greenspan: I think that's right. And I think there isn't such a thing as "the CDC"; there are a lot of people there, and there were some iconoclasts who wanted to do things quickly and in different ways, and there were bureaucrats who wanted everything to go at a very careful pace. The CDC will always be praised by many for its extraordinary contributions in this field, and criticized by a few for doing things that cautious way. I think on the whole they've done a fantastic job.

Hughes: Well, they have been criticized, of course, for the creation of the risk groups, the criticism being that they put emphasis on group membership rather than on behavior. They also gave license to those outside the risk groups not to have concerns about AIDS.

J. Greenspan: You're absolutely right.

Hughes: You mentioned the idea of an infectious agent. Talk about the other theories in those early days of what might be the cause.

J. Greenspan: They haven't all gone away, actually. We're having a seminar organized by Mitch Katz in the city Department of Public Health on poppers, nitrites, as cofactors in Kaposi's sarcoma. Poppers are carcinogenic--we're talking about KS, now--and maybe they were immunosuppressive. And then it was thought that maybe multiple infections in gay men, multiple sexually transmitted diseases--

Hughes: Yes, immune overload.

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[1] Centers for Disease Control. 1993 revised classification system for HIV infection and expanded surveillance case definition for AIDS among adolescents and adults. Morbidity and Mortality Weekly Report, 1992, 41:1-19.

J. Greenspan: That's right. And again, that idea is not dead. Hepatitis B virus, CMV [cytomegalovirus], EBV [Epstein-Barr virus], were all candidates, either alone or in groups or all of them.

Hughes: I'm thinking of the KS group: Did any of those theories take precedence in the early days?

J. Greenspan: I think the poppers one was a very powerful one. I don't think it's gone away, as I say. We really don't quite know why some people get KS and others don't, and why gay men get a lot and transfusion recipients don't get very much, and why women get less, and why there have only been a couple of cases in children.

Taking Patient Histories

Hughes: What sort of histories were you taking on your patients, and did the detail change as you realized that you were really on to something?

J. Greenspan: Before what was to be called AIDS was discovered, we weren't paying much attention to the things that you characterized as risk group status. As soon as it was announced, we did start to include in our medical history, and in our discussion of the medical history, issues of gay lifestyle to start with, and then after a year injection drug use, and then transfusion, and then a broader sexual history. So the things that hadn't been discussed in dentistry before, we started to introduce in our own clinic, because we were seeing so many AIDS patients.

You also have to remember that many, many of the patients who came to us, and still do, came on referral, with all of this already very clear and in the open. So we're in a very different situation here from a clinic in a place with low AIDS prevalence, where it may very well often be the dentist who sees the lesion and is therefore the first diagnostician of what was an unsuspected HIV infection. The vast majority of our cases are referred by their AIDS docs or by their friends, and they know very well what this is. Now, we do have a minority where we actually diagnose HIV infection because of an unsuspected candidiasis or hairy leukoplakia.

So for us, it was very easy to introduce the whole issue of what was then risk group status, and subsequently became HIV infection. It's been much more difficult elsewhere, I think, for dentistry.

Hughes: Were these changes in history-taking based on a group decision: "Well, now we've got this group of patients, let's try to be scientific about how we trace their histories and all ask similar questions."

J. Greenspan: No, nothing like that. It was at the individual clinician's discretion. The group in our oral medicine clinic started to do it first of all individually and then discussing among themselves, and partly from having attended the KS Clinic and Study Group. We started to teach the residents to do that, we started to give talks about it, and it spread.

Kaposi's Sarcoma Clinic and Study Group

Organizational Meetings

Hughes: Well, let's go back to the earlier history, namely the KS Clinic and Study Group. Did you go to the Faculty Club meeting with Dr. Conant in 1981?

J. Greenspan: The first of those I was invited to was about the time that they applied for the very first grant. They got an ACS [American Cancer Society] grant to study Kaposi's sarcoma. That was Conant and Ziegler and Volberding. Do you know when that was?

Hughes: I believe that was granted in November, 1981.

J. Greenspan: Right. I was involved in at least one of the luncheon meetings, because somewhere I have a piece of paper tablecloth that I tore off on which I had done a quick analysis of what it would require to start banking specimens. We had white tablecloths--no, it was a place mat. Got to find that. That would have been October or November of 1981.

Hughes: How does that tie in with the KS Study Group? What are these luncheon meetings?

J. Greenspan: I think those were separate, very small things. The one I went to was only four of us, where we sat around--Marc and John and I don't remember who else--there may have only been three of us. They told me about what they wanted to do to start studying KS, and that they wanted to store specimens.

Organizing the AIDS Specimen Bank

J. Greenspan: Now, they knew that I stored specimens, because we were working on the lymphoma case, and they knew I had a liquid nitrogen storage and serum storage. Also, I had published on Sjogren's syndrome,[1] and we had a small tissue, serum, and saliva bank that Troy Daniels, my colleague, had started about 1972 and which I had contributed to. I ran that in my little lab. They'd asked a lot of people if they would allow them to store serum in their freezers and tissue in their liquid nitrogen, and people said, "No, we don't want to have anything to do with that nasty stuff."

Hughes: They were afraid of the risk?

J. Greenspan: Yes. They either weren't interested, couldn't be bothered, or they were concerned about the risk. So they asked me to start an AIDS specimen bank and I said I'd be delighted to do it. My motivation was to become part of what was going on, and to get involved in the research.

Hughes: Would these other facilities be considered banks, or were they just individual caches?

J. Greenspan: No, in those days, many of us had our own freezers. I don't think there were significant banks here on campus. The idea of the bank came about because John Ziegler had run such a bank when he was the founding director of the Uganda Cancer Research Center in Kampala, the capital of Uganda. And so John knew all about that, and asked if I'd be interested in helping them set one up. That was how it started, that involvement on my part. And then we had a site visit for the ACS grant, and we presented it over in the dermatology AC [Ambulatory Care Center] conference room.

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[1] E. J. Shillitoe, T. E. Daniels, et al. Antibody to cytomegalovirus in patients with Sjogren's syndrome, as determined by ELISA. Arthritis Rheumatology, 1982, 25:331-336.

Hughes: Now, be a bit more explicit about how much experience you had had in tissue banking. Had you done any in Britain?

J. Greenspan: I'd done it in Britain as well. It started with my Ph.D. in 1962 when I learned histochemistry. We did all our histochemistry on frozen tissue, so I would sacrifice the animals, freeze the tissue, and store it in liquid nitrogen. Then subsequently I would take out batches of tissue that had been accumulated over weeks, with animals being sacrificed at daily intervals, and do all the histochemistry simultaneously so it was all standardized. So I had had my own small histochemistry tissue bank since 1963.

Then when I came here, Troy got this Sjogren's syndrome clinic going, in conjunction with Dr. Norman Talal, who was then over at the VA. We stored labial salivary gland biopsies from human Sjogren's syndrome patients; we stored their serum, and we stored their saliva. So we had a small divisional program. We didn't call it a bank, I think; I don't know what we called it. We didn't have a name for it. But we did it. So I'd been doing it by then [1982] for nearly twenty years.

Hughes: And it was that fact that made it logical to ask you whether you would be interested in an AIDS specimen bank?

J. Greenspan: I believe so.

Hughes: People knew about your bank?

J. Greenspan: Because we had talked about it during the course of the lymphoma study, and because they knew a little bit about my other work. So yes, I think that was the reason.

Hughes: Well, recreate that meeting with the four of you.

J. Greenspan: It may have been three of us, because I can only remember Conant and Ziegler. Volberding wasn't at that meeting.

Hughes: Can you be a bit more specific about what was discussed?

J. Greenspan: Well, Marc had called me up just a few days before and said, "John, I know you're interested in what's going on; you've come a lot to these Thursday sessions [Kaposi's Sarcoma Study Group] we have; I know you're doing this lymphoma thing with John Ziegler. We're going in for an American Cancer Society grant and we need someone to store the serum for us. It wouldn't be much; it would just be a box in a freezer somewhere. This one doesn't want to do it"--I'm not going to name the people--"and that one doesn't want to do it. Would you be interested?" And I said I'd be extremely interested. It was very simple, very straightforward, and [I said] "I'd love to be involved, particularly if there's some money involved, because I don't have money for that kind of stuff."

Hughes: It was just serum that they were talking about storing at that point?

J. Greenspan: They talked about serum, yes.

Hughes: But nothing else?

J. Greenspan: Well, once we had lunch, we talked about tissue. And other things too, actually, although I didn't get very much involved in it. But as soon as Warren [Winkelstein] entered the scene with the San Francisco Men's Health Study, we started to store a lot of other things, feces and semen and pulmonary expectorates. But no, at that time we talked about serum. In fact, we called it a serum and tissue bank. We were looking at biopsies of KS.

There was an enormous demand. Marc was getting letters from all over the world from people who wanted KS tissue in order to try and find out what the agent was. Ashley T. Haase here, the man who developed in situ hybridization, thought it was hepatitis before he went to Minnesota. Harold zun Hausen, who at that time I didn't know but subsequently has been a close colleague, thought it might be papilloma virus. All sorts of people wanted bits of first of all Kaposi's sarcoma and then lymphoma.

This was, of course, before HIV had been discovered, so there was also an insatiable demand for serum in order to try to find the virus. Indeed, as soon as we got the serum bank going, we worked with Jay Levy and sent stuff over to the Pasteur Institute to Françoise Barré-Sinoussi, which was one of the first batches of serum tested for LAV [lymphadenopathy associated virus] when they got that going. We in fact were strong supporters of the French group and their claims to have discovered the virus. Well, simultaneously with Jay Levy.

Hughes: Yes, I saw the correspondence with Françoise.[1]

J. Greenspan: [tape interruption as Greenspan reviews correspondence] Well, I've never sat down and analyzed it with them. They may have a totally different perception of it.

Hughes: Well, let's return to the KS Clinic. What was the next step after these faculty club meetings?

J. Greenspan: Well, I'm not sure whether the faculty club meetings preceded or occurred simultaneously with Marc getting the Thursday morning KS Clinic and Study Club going.

Kaposi's Sarcoma Study Group

Hughes: I think what he was trying to determine if there was enough interest to start a study group.

J. Greenspan: Right. Well, I think I can say pretty certainly that I wasn't involved in that early a meeting. I didn't get involved in a lunchtime meeting with Marc until after the KS Clinic and Study Club had got going. But I used to go to those Thursday sessions. He must have had a mailing list; I don't remember. I used to go to them to find out what was going on, mainly because we'd discovered the lymphoma story, and we wanted to know who was involved and then get them helping us.

Hughes: Describe a typical session.

J. Greenspan: They were on Thursday morning, over in the dermatology conference room. We would wander in. The best part would be talking to people for a few minutes before the thing started. "What's the latest; what have you heard; what are you seeing; what are you doing?"

Hughes: Who was there?

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[1] Andrew R. Moss to John S. Greenspan, June 27, 1984; John S. Greenspan to Françoise Barré-Sinoussi, July 9, 1984. (John S. Greenspan papers [hereafter JSG papers], CN 92-0123, box 2-92, folder OAC-ASB Barré-Sinoussi, F.) Greenspan's papers, in his personal possession, are located off campus at a site administered by the UCSF Materiel Management Storage Program.

J. Greenspan: Well, the very obvious people were Conant, Volberding, Abrams, Larry Drew, Dan Stites, Art Ammann, I think Connie Wofsy; I don't remember Merle Sande being involved in it at all; nurse practitioners from Marc's clinic--there were a whole series of them over the years--

Hughes: Now, you mean his private dermatology clinic, not the KS Clinic?

J. Greenspan: His private clinic.

Hughes: Were there people from the KS Clinic?

J. Greenspan: As soon as it got established, yes.

Hughes: Helen Schietinger used to come?

J. Greenspan: Yes, that's who I'm thinking of, Helen Schietinger.

Hughes: The nurse practitioners were from Conant's private practice?

J. Greenspan: Yes.

Hughes: Here on Parnassus, and he had another practice near Mt. Zion [Medical Center].

J. Greenspan: He didn't have that then. He was here.

Hughes: What about local private practitioners?

J. Greenspan: Some--Phillip Hopewell. Andrew Moss.[1] A couple of our dental people. [Sol] Silverman. Me. Deb [Greenspan] would go when she could. Francina Lozada who saw the first cases [of oral KS].[2] A couple of our residents, a couple of derm residents usually. The room was always full. Oh, blood bank people. [Herbert A.] Perkins[3] would often be there. Mike Busch, when he came on board; I don't know when he started. He started a bit later, I think. Oh, Girish Vyas.

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[1] See the oral history in this series with Andrew R. Moss, who is an epidemiologist.

[2] F. Lozada, S. Silverman, M. Conant. The Kaposi's sarcoma puzzle: New outbreak of oral tumors, malignancies and infectious diseases strikes young male homosexuals. California Dental Association Journal, March-April 1982:39-42.

[3] See the oral hisotry in this series with Herbert A. Perkins, M.D.

He's been part of this story, actually, right from the beginning. He tends to get forgotten.

Hughes: What is he?

J. Greenspan: He's a hematologist; he's a blood banker. He really got us tied up with Winklestein; we didn't want to have anything to do with that. He's a man of very strong opinions. He had a young woman who was I think then a resident, Elizabeth Donegan. She's gone off into radiology now, I think, but she was involved with that. So we had the blood banking people, some pediatrics--oh, Diane Wara--ID [infectious disease], Marc's group, us--

Hughes: The health department? Selma Dritz?

J. Greenspan: Absolutely. Selma Dritz, [Erwin] Braff came to start with, her boss, and then he retired. Who else from the health department? Oh, terrible memory. I remember Selma. Don Francis turned up from time to time. He wasn't based here in California then, I don't think.

Hughes: He was in Atlanta at the CDC.

J. Greenspan: Yes, but he turned up from time to time.

Hughes: Of course, the CDC was doing epidemiology here.

J. Greenspan: We didn't like that.

Hughes: [laughs] I want to hear about that.

J. Greenspan: Muscling in on our territory. Who else from the Department of Health? That's terrible, I can't think who else was there.

Hughes: Silverman probably didn't come, did he?

J. Greenspan: Merv? I don't remember ever seeing Merv at these sessions. But my memory may not be reliable.

Hughes: Anybody from the VA? Did Ziegler come?

J. Greenspan: Oh, yes, every time.

Hughes: Anybody else?

J. Greenspan: From the VA? I don't think so.

Hughes: He had trouble getting people there interested in AIDS.

J. Greenspan: Yes, I don't think anybody else came from the VA. Then there were patients, and gay activists. They weren't activists then. The community came, right from the beginning. Patients. And people who were getting the community services going, the Shanti people, and what was to become Open Hand, and the San Francisco AIDS Foundation. Those people drifted in. One didn't know them then. I'm looking back in my mind's eye at people whom I subsequently got to know quite well but didn't know then; you know what it's like. You're prodding my memory.

The Greenspans' Prior Associations with the Gay Community

Hughes: Was this your first professional encounter with the gay community?

J. Greenspan: No, it wasn't. This is an interesting story too as to why Deborah and I felt so comfortable in this area. When we graduated from the Royal Dental [Hospital] in London, Deborah went straight into practice. She was an associate for a couple of years [1964-1965] up in north London, and then we bought a practice very near the hospital where I worked. It was actually in Carnaby Street, at the beginning of the whole Carnaby Street thing. The Beatles were just getting going. I remember seeing the Rolling Stones visiting Carnaby Street on one of their first England tours. This was 1965. The practice was in Carnaby Street, very much in theater land. I used to work there two evenings a week and a Saturday, and Deb was there all the time. We saw scores of homosexual patients. Lots of legal drug users--heroin addicts. Deb and I, I think we both come from open-minded families, and we had a practice with lots of gay men. We got on with them fine. Deb is an extremely compassionate person.

Both Deb and I are very interested in dentistry as part of medicine. We were trained that way, it's our inclination. Sol Silverman, with whom we worked, who recruited me here, had the same mentality. And we were very comfortable here. We were very proud to be involved in the [AIDS] epidemic. We felt very privileged right from the beginning; felt privileged to be helping people who were really sick and who really cared about what we were doing.

We felt privileged to be involved in what was intellectually an explosive period of discovery. We were very excited about the whole thing.

Format of the KS Study Group

Hughes: Well, back to the study group. Was the format a formal academic presentation with questions?

J. Greenspan: Oh, yes, it was a seminar and then questions. But sometimes there would be an informal thing, and there might be each time a formal speaker. Marc would usually get up and talk about the latest ideas, fisting, rimming, group sex. We quickly heard about the clusters in southern California, the Selma Dritz analysis of Gaetan Dugas, although we didn't know his name, and the others--the one man who'd gone home to France or wherever it was and infected twenty women. We quickly heard about the health care workers in Scandinavia--or was it Holland?--who came back from Africa.

Hughes: I think it was Belgium.[1]

J. Greenspan: Belgium. We quickly heard about the first cases in Africa. We told each other about the oral lesions and the lung lesions and the brain lesions.

Hughes: Was the Africa story making many inroads then?

J. Greenspan: Nathan Clumeck, who was one of the first to get the Belgian thing going, is a Belgian physician based in Antwerp. He was in Zaire and really got that going. He has family out here in San Francisco and he visited. So we met him very early on. We met Jonathan Mann, who has family here, and visited very early on. Almost all of the early big names.

Hughes: Did these people actually appear at the KS Study Group?

J. Greenspan: I don't remember that. I think Clumeck did give a talk. We don't have the schedule of who spoke?

Hughes: Some of them.

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[1] Early cases of what later was identified as AIDS occurred in Denmark and Belgium in 1980. (Randy Shilts. And the Band Played On: Politics, People, and the AIDS Epidemic. New York: Penguin Books, 1988, pp. 34-35.

J. Greenspan: I don't remember Jonathan Mann giving a talk. Jonathan may have appeared on the scene a bit later, actually. But CDC people did come through. Perkins[1] gave a talk, and we gave him a terrible time, because the blood bank wasn't testing for hepatitis. That was around about the time it was beginning to be very clear that it was an infectious agent.

Irwin Memorial Blood Bank

Hughes: That was probably 1983, because an occurrence which supported that notion was the Rh-negative baby here, Art Ammann's baby?

J. Greenspan: That is correct. And we got very angry with Perkins, because he was reluctant to use the hepatitis B [core antibody test], which we regarded as a reasonable surrogate for screening blood.

Hughes: What argument did he give?

J. Greenspan: That it was unproven and not cost-effective.

Hughes: And how did he react to the criticism?

J. Greenspan: Oh, he didn't like it.

Hughes: Before the HIV antibody test came in, he instituted hepatitis B core antibody testing, but not that many months before the HIV test was available.[2]

J. Greenspan: So a lot of people got HIV during that period, including a bunch of our patients. I don't know, it's easy to condemn someone in retrospect, and he was part of the dominant opinion in blood banking.

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[1] See the oral history in this series with Herbert Perkins, M.D.

[2] Irwin Memorial Blood Bank [IMBB] began to test donor blood for hepatitis B core antigen on May 1, 1984. (Ruth Cordell to Brian McDonough, Dr. Perkins, Chris Shoemaker, March 21, 1984. IMBB documents, CBBL 01310. CBBL binder 4, 1-11/84.) On March 6, 1985, IMBB began testing for HIV. (Brian McDonough to all [IMBB] staff members, March 15, 1985. IMBB documents, CBBL 02796.)

Hughes: Oh, yes. In fact, Irwin probably has a better record than most blood banks in terms of screening for HIV.

J. Greenspan: Very much so.

KS Study Group Topics

Hughes: What was roughly the group size from week to week?

J. Greenspan: Forty. Minimum of twenty, maximum 100 if there was a big talk. I remember Art Ammann revealing the first information about CD4 counts. He and Dan Stites were among the first to show that CD4 [cell levels]--T4, as we called them--changed. Healthy homosexual men had a certain level, the homosexual men who weren't so well had lymphadenopathy, they were lower, and the people with full-blown AIDS were very low. That was before HIV was discovered. So I remember that talk; that was very exciting.

I remember the one with Perkins; that was very exciting. Those are the two that I really very clearly remember. I remember a marvelous early one that Connie Wofsy[1] gave where she started to talk about the multi-factorial care that you had to provide to people with AIDS and with multiple opportunistic infections. Oh, and I remember of course a couple by Don Abrams about lymphadenopathy, but I haven't talked to you about that. That's another reason I got involved, because, you see, I was one of Don Abrams' mentors.

Research with Donald I. Abrams

J. Greenspan: Don Abrams and I had started to work together a couple of years before AIDS. He was a fellow in hematology, and we wanted to study the hematological status of patients with canker sores. People with aphthous ulcers were claimed by colleagues in Britain in the early seventies to have anemia and other blood problems, and when I came here, I wanted to repeat some work I'd done in London with the hematologists.

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[1] See the oral history in this series with Constance B. Wofsy.

So in about 1978, I asked Curt Ries, who was then head of hematology, to recommend a young clinician who might want to work with me on a funded project and get some publications out of it, and he recommended Don Abrams. I met Don Abrams, and Don Abrams worked with us for a number of years as our hematologist, and we published a couple of papers.[1] Don and I and Deb got on well, and became friends.

So when he started to get involved in AIDS research, I was one of the people he came to and asked advice. He knew that I knew how to design studies, how to store specimens, how to get people in different disciplines to work together. I was just in the early days one of his advisors. I remember very well him trying to write grants, and giving talks at the Kaposi's Sarcoma Clinic about lymphadenopathy and claiming that it was protective; these men were doing better. He always had a very optimistic view, and he was probably in some respects right.

More on the Study Group and Clinic

J. Greenspan: So I remember those sessions very well. But there must have been dozens of others that I don't remember. Isn't that terrible? I remember big arguments about the bathhouses. I remember Marc telling us what they got up to. That was a revelation for most of us. And us saying, "They've got to be closed." Big, big thing, and then Merv Silverman may have defended his position, because he was very slow about doing anything to close the bathhouses.[2] That was awful as well.

Hughes: How does all this tie in with the KS Clinic itself?

J. Greenspan: Well, the clinicians at these sessions of Marc's got to know each other, and there was a lot of cross-referral. There weren't that many patients, and we knew most of them by name. And we could get each other on the phone in those days. It was a typical collegial referral kind of situation. And out of it grew the grants and the research protocols.

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[1] See, for example: J. A. Olson, A. Feinberg, et al. Serum vitamin B[12-subscript], folate and iron levels in recurrent aphthous ulceration. Oral Surgery, 1982, 54:517-520.

[2] See the oral history in this series with Mervyn F. Silverman.

Hughes: Do you remember any problem in establishing the clinic?

J. Greenspan: Well, I don't remember that.

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Hughes: How broad in function was the KS Clinic?

J. Greenspan: It was to study KS, but I think we used to discuss the whole spectrum of AIDS.

Hughes: Yes, but that's all there was at that point, because the AIDS Clinic at San Francisco General didn't open until January 1982.

J. Greenspan: Correct. And then Harry Hollander's clinic [Adult Immunodeficiency Clinic] was much later than that. I was on the committee with Holly Smith and Jack Stobo to get that together. That probably wasn't until 1986 or so--no, it was before then.

Hughes: It was 1983.

J. Greenspan: Dentistry actually gave up the space at A333 that the clinic still occupies.

Hughes: Were you called in to the KS Clinic to look at patients who had oral lesions?

J. Greenspan: No, they came over here; they were referred. I tended to concentrate on the pathology side. I went in and consulted clinically when there was something interesting, but the mainstream clinical work was done by Deborah Greenspan, Sol Silverman, Francine Lozada, and a Brazilian who was then here as a graduate student of mine and Silverman, Cesar Miglionati who then went back to Brazil and came back again, and is now in Switzerland.

Educating Health Professionals

Hughes: Were patients ever presented to the study group?

J. Greenspan: I don't remember.

Hughes: There must have been some education needed in the beginning. Most health workers had never seen a KS lesion, for example.

J. Greenspan: I know. But I don't remember us doing a classical 19th-century or British rounds where you talk about the patients and then you troop into a clinic and see them. Does Marc remember us having patients?

Hughes: I'd have to look at the interview again, but I don't think he mentioned it.[1] Well, how did you learn? You had seen Kaposi's before, but others hadn't.

J. Greenspan: Patients were referred to us, and we saw them.

Hughes: But what about other specialists? What about people in gastroenterology, for example? How did they learn?

J. Greenspan: That's a good question. I don't know. I think they learned on the job. It was one of the fun things. Back to the old days. [laughs] I think they learned by having a referral.

Hughes: You mean as opposed to plowing through the literature?

J. Greenspan: Or by having it taught, as we learn things from other people.

Hughes: Back to the old days where you actually looked at patients, rather than sitting in the library.

J. Greenspan: Exactly. I think we saw patients in our own clinics.

Contacts with AIDS Physicians Elsewhere

Hughes: How much were you paying attention to what was going on elsewhere, which in the early days would be either New York or Los Angeles?

J. Greenspan: We weren't a lot. I think Marc was in contact with them. Bijan Safai and Alvin Friedman-Kien in New York are friends of Marc's, and they talked a lot. Dr. Pomeranz was another one.

Hughes: Did they come through San Francisco occasionally?

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[1] See the oral history in this series with Marcus A. Conant.

J. Greenspan: Yes, we had a meeting. We had our very first AIDS symposium in Toland Hall [UCSF] on Kaposi's sarcoma. I don't remember when it was--probably 1982. Don Abrams and Marc organized that. It was very fiery, because it was the beginning of the realization that we were dealing with more than just a disease, that we were dealing with a social, cultural phenomenon, with all of the issues about gay pride and resistance to the notion on the part of some of the gays that it was a disease that had to be taken seriously because it stigmatized them, and some of the physicians fighting each other. It was a revelation.

Hughes: So the gay community was there.

J. Greenspan: Well, the gay physicians were there. There's one very famous clinician, I think from Sacramento; Pomeranz was his name. He had AIDS, and he died. He was very, very angry at the idea that this should be taken too seriously, because it would stigmatize gays. They were just beginning to get some rights and some freedom. That was a real revelation to some of us. We didn't know what had hit us. [laughs]

UCSF AIDS Specimen Bank Tissue Committee

Hughes: I saw an early reference to a tissue committee.[1] Was it organized early on in a formal way?

J. Greenspan: Well, we needed that for the purposes of the grant proposal, and we did meet a couple of times to devise the rules, and then after that they left the whole thing to me. So it was a necessary thing in order to show the world that we were behaving responsibly.

At first, I did not release anything without consulting every member of the committee and getting a vote, but subsequently they gave me authority to use my discretion. The policy became that I didn't release anything unless the people who deposited it were comfortable and had come to terms about joint publication, and I didn't release it if we were already working on the same project. Otherwise, we were pretty open, pretty free with our specimens.

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[1] John S. Greenspan to AIDS Study Tissue Committee, February 23, 1983. (JSG papers, 89-0117, carton 2, folder: Conant, M.A.: AIDS Site Visit, 3/4 & 5/83).

Hughes: Who was actually doing the pathology?

J. Greenspan: Everybody.

Hughes: Were they all doing their own lab work?

J. Greenspan: Yes. It wasn't organized, and still isn't. You think of AIDS, and an AIDS community, and an AIDS structure, but in fact it's everybody doing their own job of seeing AIDS patients.

Hughes: And they were doing the tests that they needed for their work, or that they had the capacity for?

J. Greenspan: Yes.

Technology

Hughes: Were helper-suppressor [cell] ratios in the picture in those early years?

J. Greenspan: No, that was invented as part of the AIDS story.

Monoclonal Antibodies

J. Greenspan: That seminar I told you about that Art Ammann and Dan Stites gave was an introduction to something that none of us had given any thought to before. T4 and T8 cells had only just been invented. Monoclonal antibodies had only come on line commercially about a year before. They weren't even officially approved for diagnostic purposes; they were only available for research. So the whole thing actually revolved around two discoveries, the discovery of monoclonal antibodies and reverse transcriptase. That had only happened a little while before--[Howard] Temin, who died last year.[1]

Hughes: Monoclonals had been around for a while--

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[1] In 1975 Georges Koehler and Cesar Milstein discovered monoclonal antibodies. Between 1968 and 1970 Howard Temin and David Baltimore independently discovered reverse transcriptase.

J. Greenspan: Seventy-six, 1977--Milstein's paper. No, it was last week, in terms of people's minds. I remember getting my first commercially available monoclonals in about 1979 from Coulter in Florida, and Ortho Pharmaceuticals sold them also. And that was late seventies. I doubt it was before. Actually, we were among the very few groups using them. I think I was the first on campus to use them on tissue.

Hughes: But you had been using them prior to the epidemic?

J. Greenspan: On tissue, though. Yes, and in fact, as soon as the lymph nodes came along, Don got us to do a study on lymph node T cells, which we never published, which was a shame, because we got swept up with the other things.

Frozen Sections

Hughes: What sort of technology did you use?

J. Greenspan: Ours was very simple. We cut cryostat sections, cut frozen sections, and then did immunofluorescence or immunohistochemistry using the monoclonals, and that was a technique that I had been familiar with for many, many years. It's now absolutely standard.

Flow Cytometry

Hughes: I remember in Randy Shilts' book, some discussion of [Edgar] Engleman's fluorescent activated cell sorter.[1]

J. Greenspan: Oh, he--young Engleman--was often at the club [KS Study Group]. I'm sorry, I should have mentioned that.

Hughes: Was he the only one from Stanford?

J. Greenspan: Oh, I think so. I don't remember any others. See, his father [Ephraim P. Engleman] was here. His father was head of rheumatology, and Ed had been a resident here. He'd been a resident with Norm Talal and he trained here.

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[1] Randy Shilts. And the Band Played On: Politics, People, and the AIDS Epidemic. New York: Penguin Books, 1988, p.308.

Hughes: Well, he relatively early on began to do helper-suppressor studies.

J. Greenspan: Very much so.

Hughes: He had a flow cytometer--

J. Greenspan: Yes, one of the first.

Hughes: Wasn't the lack of one here a hindrance to your research? This was an expensive piece of equipment.

J. Greenspan: Oh, yes, there were only a few in the country.

Hughes: Were there any here?

J. Greenspan: No, we didn't have one. That was one of the things we bought with one of the first grants; we bought it for Dan Stites.

Hughes: Nobody at UCSF had one?

J. Greenspan: Yes. There was a man in neurosurgery, a Japanese man, Hoshino, who had actually built one.[1] I used it for my aphthous ulcer study, so that would have been 1979. Very simple one.

Hughes: Was he approached by the KS group?

J. Greenspan: Yes, he had let us do a few things on it. Then they worked with Beckman, who were developing the commercial machine. I think some of Art Ammann's early work was done with Beckman. And then they lent us one, and now you've got them everywhere like typewriters. But they were very rare. So first of all, the reagents and then the technology were only developing at the same time they were being applied. It was a most extraordinary thing.

Technology Transfer

Hughes: Was there some synergism with the epidemic?

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[1] According to Dr. Robert A. Fishman of the UCSF Department of Neurology, Dr. Hoshino was not the developer but applied the flow cytometer to use with brain tumors.

J. Greenspan: Oh, of course.

Hughes: The fact that now there was quite a substantial potential market--

J. Greenspan: Beckman and Ortho reckoned they'd make big money, and they have. For sure, absolutely. It's a beautiful example of a reverberating system of technology transfer. It would have taken another ten years for that thing to get where it did if AIDS hadn't come along. It's like war, you know.

Hughes: I think it was Beckton Dickinson, not Beckman, which developed the cell sorter.

J. Greenspan: Maybe it was Beckton Dickinson.

Hughes: You're right, it was Beckton Dickinson. It lent a machine to Herb Perkins for a similar purpose.

J. Greenspan: Yes, that's right.

Hughes: Talk about what the rest of the campus thought about you, this little group off with this wild disease in a stigmatized population.

J. Greenspan: I can tell you what they thought about us by telling you a story. I don't have the year. American Cancer Society and American Society for Cancer Research meeting at the Town and Country Resort Center at San Diego. It would be about 1982, 1983 at the latest.

Don Abrams is giving his first or second paper on lymphadenopathy. His boss shall be nameless, a man between Don's age and mine. In 1982 I was forty-four; Don was in his early thirties. So here's a man in his late thirties who is Don's boss, head of the division. He has since left the university. He and I are standing in the back of the room. Don gives his paper. The man turns to me and says, "Well, I'm glad I have my name on that paper, because that's one more for my CV, but I don't expect we'll hear any more of this. Do you, John?" [laughter] It's like the chief of IBM in 1948 who was told about computers and said, "That's a wonderful idea. The world's going to need at least six of those." [laughter]

Tensions

Campus Reactions

J. Greenspan: The campus thought we were very weird, either distasteful or just silly. Threatening, aggressive, and greedy, a nuisance, getting in the way of the usual way of doing things, best pushed over to the [San Francisco] General [Hospital]. By the way, about half of the things I'm saying are in part still true. Some powerful people on campus have never been comfortable with AIDS, have never embraced it as an important thing.

Hughes: Why?

J. Greenspan: Who knows? The then-chancellor, even the dean of medicine, were happy to take credit for money brought on board, but giving space, resources, or support to the AIDS effort was really more of a problem. That's a common story, I think.

Hughes: Well, is it as simple as homophobia?

J. Greenspan: Some of it was homophobia, yes. I remember one member of the senior faculty saying, "Well, AIDS"--I think it was called AIDS by then--"AIDS will probably kill off all the homosexuals, so it will take care of itself." This is a rational man, a very compassionate man, but that's what he said.

Hughes: Well, there was worry, too, that UCSF would become known as an AIDS hospital, with repercussions for resident recruitment--

J. Greenspan: Correct. The leper story, yes. That was a big part of the motivation. I think the opposite has happened, if anything. I think it has brought us fame; it has brought us a lot of young people who are keen to be involved in an exciting thing and to be of value. It's opened up some rather rigid disciplines to each other, and brought in the social and behavioral sciences and the humanist approaches, brought in the notion that the patients have a say, not only in their care but in the research. Turned us upside down, most of it for the better, I think.

Centers for Disease Control

Hughes: You implied that the CDC was felt to be invading your turf.

J. Greenspan: Yes.

Hughes: Could you talk to that?

J. Greenspan: I don't have enormous insight into this, but when we were meeting in the Thursday morning sessions and beginning to talk about the research we wanted to do, I remember a lot of resentment because the CDC were swooping in and studying "our" patients and "our" subjects. We were uncomfortable even about them establishing the San Francisco City Clinic cohort, but we've embraced that. But there was discomfort and resentment, and it was a straightforward professional rivalry. It all settled down.

Hughes: How did Andrew Moss feel?

J. Greenspan: Oh, he was bitterly resentful. And you've spoken with him, haven't you?

Hughes: Yes.[1]

J. Greenspan: Because you couldn't have asked the question by accident. He was bitterly resentful of these people coming in. So was Warren [Winkelstein], I think.[2] But it all settled down. It [the collaboration with CDC] has been very productive, actually.

Hughes: And Selma Dritz?

J. Greenspan: I don't remember. I didn't know her all that well, actually.

Hughes: That was a little different anyway; health departments are expected to collaborate with the CDC.

J. Greenspan: It was her job, yes. I don't remember her complaining. I think she collaborated fully.

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[1] See the oral history in this series with Andrew Moss.

[2] An oral history in this series is in progress with Warren Winkelstein.

But it all settled down. First there was this enormous sense of possessiveness about the phenomenon and our desire to capitalize on it in a professional sense, mixed with appropriate altruistic notions of doing good. It's a very complex set of motivations. But there was a lot of narrow ambition-based professional turf stuff, yes.

Randy Shilts exaggerates it, and he's off-base. Poor chap, rest his soul, he got a lot of stuff wrong, but he wasn't wrong about everything. Wasn't wrong about Jay Levy not having enough money to buy a centrifuge. He was absolutely right. He wasn't wrong about Marc not getting support from the authorities. But it all came through in the end. It takes time.

Turf Battles

Hughes: How were these turf battles settled? Is it a matter of appropriating a bit of the puzzle, and publishing on it? Does that nail it down?

J. Greenspan: John Ziegler was a very important peacemaker. John Ziegler came on the scene and somehow or other factored and brokered all sorts of agreements as to who should do what. He had a very good style that we would try not to have two people here doing the same thing and competing with each other. He is a very settling, noncontentious, and diplomatic person. He managed to keep Marc Conant for a while reasonably happy. But John Ziegler managed to keep people happy, and yet at the same time, maintain some credibility with Holly Smith and with the dean of medicine, Rudi Schmid, with the chancellor, Julie [Julius] Krevans. So I put down a lot of the success of our UCSF research in AIDS and the collegiality that used to apply to John Ziegler's diplomacy. I learned a lot from him.

And it's still been true until recently. I think it's broken down now because they established the Gladstone Institute [of Virology and Immunology] really almost separate from the rest of us and the AIDS community. But before that, there was a very powerful monoculture dominated by John Ziegler and Paul Volberding, who took over from Marc Conant pretty quickly.

Hughes: You can see it in the documents: It's Marc Conant doing this, Marc Conant doing that, and then all of a sudden it isn't.

J. Greenspan: Rudi Schmid fired him as director of the AIDS Clinical Research Center.

Hughes: Was he actually fired?

J. Greenspan: Well, not fired from his job, but he was relieved of that responsibility, and I suspect that was because they felt he couldn't handle the administrative side of it. He had brought in part-time people to run the money. I couldn't get the ledgers. He never asked for any reports. He was not a very successful administrator.

Hughes: Was his not being a full academic professor a factor?

J. Greenspan: I don't think it was the full story. I think if Marc had been really good at that, he could have become full time. There were opportunities for him to come full time, by the way. His then-chairman, William Epstein, tried to get him to take over Dermatology at San Francisco General. If Marc had been really interested in being an academic administrator, he could have even been a candidate for the chairmanship of the department. So no, I don't think it was because he was in a different faculty series. I think if he had been keen on administration, he would have earned such a role. He didn't want to; he wanted his independence.

Hughes: Was his role in academia diminished from then on?

J. Greenspan: It was indeed. But I don't think that was because he was pushed out, as Randy Shilts said, or because of hostility or prejudice. I think it's because Marc didn't want to be or wasn't able to become an administrator. Intellectually and as a person, he is wonderful--just a wonderful person.

Hughes: Well, he has a different style, doesn't he?

J. Greenspan: Yes. He's been one of my inspirations. I really think the world of him.

Hughes: Why did Paul Volberding, this young oncologist just out of his fellowship, rise to the top when you had people of the stature of Ziegler, who had a track record in academia?

J. Greenspan: Well, Ziegler was at the VA. The position of chief of oncology at the General had not previously been a very popular one. What happened was that they wanted to recruit Molly Cooke, his wife. In order to recruit Molly, who was wonderful, they had to find a job for Paul. The head of oncology at the General was open, and they put him in. He'd done his fellowship, he was trained, and they gave him a job. They didn't think it was going to be an important role. They didn't think he was going to become a world leader in AIDS.

Hughes: Right. But from then on, why Volberding? There were plenty of alternatives.

J. Greenspan: Because he had the job, and he rose to the challenge.

Hughes: But Ziegler did too.

J. Greenspan: Ziegler was at the VA.

Hughes: And that was the difference?

J. Greenspan: Oh, yes. Ziegler's job was at the VA. That's where his employment was; that's where his salary came from.

Hughes: Yes, but the VA is UC.

J. Greenspan: Well, there weren't that many [AIDS] patients at the VA.

Hughes: So you think it's the setting that makes Volberding?

J. Greenspan: Yes. Absolutely. And Paul worked with this wonderful nurse, Cliff Morrison.[1] He worked with the city people. Paul really did a wonderful job. I don't think there was at any time any question of anybody being thought of as doing a better one. He had the support of Connie Wofsy, who was a more senior clinician, and of John Mills, who was a very senior infectious disease person. Paul is a very astute politician, he managed to build onto his position even though he had more senior, more experienced people with him, who ultimately reported to him.

Hughes: Does Merle Sande[2] play a role?

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[1] An oral history in this series is in progress with Clifford Morrison.

[2] See the oral history in this series with Merle A. Sande.

J. Greenspan: Very much so. There's a dynamic relationship between Paul and Merle which continues.[1] They each have different strengths. They're both spectacular men. They get in each other's way sometimes, but they don't make that public, and they work well together.

Merle's a very special man, a man of unlimited energy, of unlimited generosity to other people. He doesn't build his own career through other people; rather, he tries to help his young people build their career. He was the right man for that job, too. He's become a very important leader in our AIDS activities. He wasn't in at the beginning. He was more interested in the occupational hazard thing, infection control, but he got involved. I guess with Ziegler gone, if there is an unofficial leader of our AIDS activities at UCSF, it's probably Sande, although Volberding could also claim that role, I think.

Hughes: It was obvious in the very beginning that the center of AIDS activities was here on this campus on Parnassus Avenue, because that's where the KS Clinic was. Then there was a radical institutional shift, a power shift, in essence, when the AIDS Clinic and ward were established at the General. Would you say that the balance of power is now over at the General? It gets credit for being the best AIDS hospital in the country.[2]

J. Greenspan: Yes. Well, it goes back to what you asked about, which was that it started, I think, because the leaders of the [UCSF] School of Medicine and the hospitals wanted not to have Parnassus identified as "one of those AIDS places," and because a lot of the patients' financial situations meant that they were seen in the county hospital [SFGH], and so that's where that got going. And the other shift was that it started out with a dermatological thrust with Marc's leadership, and very quickly became an infectious disease-oncology-general internal medicine and the whole of medicine thing, and the leadership was taken up, if you like, by Paul and Merle with the patients, with the mandate, with the financial basis, and with a broader team. Marc got marginalized in a way because he was A), a dermatologist, B), didn't build the program, and C), they didn't want it here. All of those things we've talked about already. I think it's exactly what it seems to be. And it's still the same.

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[1] Sande left SFGH in the summer of 1996 to become chairman of the Department of Medicine at the University of Utah.

[2] "UCSF Named Seventh-best U.S. Hospital." San Francisco Chronicle, July 11, 1994, A17.

Hughes: What implications does that have for what you are trying to do here? I'm thinking of the specimen bank, the AIDS Clinical Research Center--the entire AIDS effort on this campus.

J. Greenspan: It hasn't affected us too much. We've worked very well between the institutions. It's been quite comfortable.

Hughes: And there's never been a criticism, "Why are you applying for AIDS money for the Parnassus campus?"

J. Greenspan: Oh, no.

Hughes: That it makes more sense to have it go to San Francisco General.

J. Greenspan: No, never a word. On the contrary, we've tried to build the AIDS activities at all of the three [campuses]--now four, Mt. Zion--also at Davis and at Berkeley. That's been very collegial. John Ziegler is a very collegial man, very open-minded, had a very good vision. He really set the tone, and what I've done is really just followed it on and taken over from--and I agree with it, very much so. But John Ziegler set the tone.

Hughes: Well, we'll talk in much more detail, because I want to hear the full story.

AIDS Patients at the Oral Medicine Clinic

[Interview 2: August 2, 1994] ##

Hughes: Well, we talked last time about the KS Clinic, and since then, I have noted a protocol for patients that were presenting at the clinic. One of the steps in the workup was a consult with Oral Medicine "to rule out intraoral lesions."[1] Who was responsible for doing that exam?

J. Greenspan: Marc Conant and his nurse practitioners sent the patients over to our clinic, which is here. In those days, it was called the Oral Medicine Clinic. We now call it the Stomatology Clinical Center. Our clinicians there worked the patients up, and it was from that that our work on AIDS at the clinical level developed.

Hughes: You distinguish between oral medicine and stomatology?

J. Greenspan: No. Oral medicine is a defined discipline within dentistry. Stomatology is the name of this department, which is a very big department covering a very big field. The analogy I would give you is you have a school of medicine and a department of medicine and a division of internal medicine. Stomatology is the big field, if you like, of the study of the diseases of and associated with the mouth. Oral medicine relates to soft tissue disease, salivary gland disease, mucosal disease, and excludes periodontal disease and the basic sciences, which are other arms of this department.

Hughes: So you weren't actually at the KS Clinic? Patients were referred to you in the dental school?

J. Greenspan: Well, you see, we had two names. The KS Clinic was essentially Marc Conant seeing patients. Then we interchangeably in those days used to use the name, KS Clinic and KS Study Group for the Thursday morning sessions. But no, I and my colleagues did not physically participate in the KS Clinic in that location over there in the dermatology department. The patients were referred here, and that's how we built our cadre of patients.

Hughes: And you were doing, from a very early date, the pathology for the group.

J. Greenspan: Yes.

Hughes: Were there others as well? What about Sagebiel?

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[1] Kaposi [sic] Sarcoma Clinic. UC Departments of Dermatology-Oncology. Patient Protocol, February 1, 1982. (AIDS History Project Archives, Special Collections; UCSF Library, John L. Ziegler papers, folder: AIDS-KS patients.)

J. Greenspan: Dick Sagebiel did the skin pathology, and I tended to do the oral, mucosal pathology. It just happened to work out that way. Dick Sagebiel was the first, and then Barbara Egbert came along. But remember in those days--we're talking of 1981-1982--AIDS was a very tiny part of what we all did. I would see a few biopsies. We have a biopsy service of over 4,000 specimens a year in oral pathology, and in skin pathology they must have many, many more. It's true that a few cases became a lot more interesting, and that's how the work developed. But it really was a very tiny part of what we did in those days.

AIDS-associated Lymphoma

Forming an Interest Group

Hughes: When did you begin to feel that you were a group dealing with a disease that was going to be important, and that there was a cohesion to the group interested in AIDS?

J. Greenspan: This is a very personal perspective. I can very clearly remember when it gelled for me. I don't know the date, but I can tell you the events. And it related to the very first lymphoma case I saw.[1] A biopsy came through from an outside practitioner; it was histologically a Burkitt's lymphoma. I called the practitioner and said, "This is a young man; could he by any chance be homosexual? Because we are seeing Kaposi's sarcoma in this population, and we see lymphoma in immunosuppressed renal transplant recipients. I'm wondering if the gay population is passing on lymphoma as they're passing on Kaposi's sarcoma."

So Bill Chan, who was the oral surgeon, said, "I'll find out." He called me back and said, "Yes, he's gay." So I put two and two together and decided that whatever the gay-related disease was, it involved KS and might also involve lymphoma. We then got another case within a week or two, so I was convinced.

I actually called John Ziegler, who had just arrived on campus. I had never met him, but he had published an article, a review on Burkitt's lymphoma--and we can time this event from when this article was published--in the New England Journal of Medicine. And because he had reviewed Burkitt's lymphoma, I called him and said, "I know you're on campus now; you don't know me. Can we get together? We have some lymphoma cases." And I think he said, "We've got two as well." Actually, one of them was the same case; it was a VA nurse who was a patient of ours, a male nurse.

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[1] This is a repetition of Greenspan's remarks in the first interview, but it includes new information.

The group that we got together was John Ziegler, me, Larry Drew, Evelyne Lennette, who is the EBV [Epstein-Barr virus] person over at Berkeley, Ed Shillitoe, who was then with me; he's a herpes virologist. He left in November 1983 and went to Houston, and now he's in Syracuse, New York. And then there were Larry Mintz, also from Mt. Zion [Medical Center].

Hughes: Now, this is the KS Study Group?

J. Greenspan: No, this is the little group we got together to write up the lymphomas. And you can look at who else was on it by looking at the MMWR report, the very first report of AIDS lymphoma.[1] We tried to find out whether it was an EBV [Epstein-Barr virus]-associated disease. For me, that was the beginning of a coherent approach to studying AIDS, and for me, it coincided with or even preceded my active involvement in Marcus Conant's KS Study Group. We were starting to work, you see, somewhere in early 1982 or late 1981. And the KS Study Group was getting together at the same time.

Hughes: Now, were you also feeling that this disease was important?

J. Greenspan: Well, it was very exciting. Any discovery in science is exciting. And I, with Ed Shillitoe, had been extremely interested in the role of viruses in causing oral cancer and lymphoma. There were various other streams of my work which fed into this. So yes, I thought it was a gateway. Yes, I really attached enormous importance to it.

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[1] Centers for Disease Control. Diffuse, undifferentiated non-Hodgkins lymphoma among homosexual males--United States. MMWR, June 4, 1982, 31(21):277-279.

Immunosuppression

Hughes: Was there a scientific basis for associating lymphoma and KS?

J. Greenspan: Well, yes, it was that in other situations where there is immunosuppression, people get these diseases. And it was at about that time that Dan Stites and Art Ammann presented at the KS Study Group the first information on T4 and T8 cell numbers and ratios, before the virus had been discovered. They showed that in a healthy population, the T4-T8 ratio was about two to one; then in healthy gay men, it dropped a little bit; in gay men who seemed to be getting the early stages of the disease, it dropped more; and in people with AIDS, it was very, very low. It went from two to one down to about 0.5.

Hughes: When would that have been?

J. Greenspan: Probably 1982. I remember the histograms very clearly. I wish I knew when it was. Dan Stites might remember when it was, or Art Ammann. And I remember thinking, "Oh, yes, it all fits in, the lymphoma, the KS, the immunosuppression, the Pneumocystis."

We were all very clear in our minds then that we were dealing with an immunosuppressive state, and presumably one that was induced by a virus because of the clustering of AIDS cases that Selma Dritz showed us.

We didn't know his name was Gaetan Dugas then; we had to wait for Randy Shilts to tell us that. But we knew about the Air Canada steward--we knew all about that. We knew about the other man who had gone from Africa to Europe or from South America to Europe and had passed the disease on to ten or fifteen of his sexual partners. It was very obviously a sexually transmitted infection, and we assumed a virus. It wasn't that mysterious.

Etiology

Hughes: You assumed a virus, but you were also considering other agents?

J. Greenspan: Yes, we were thinking of multiple antigenic challenge causing immunosuppression, and we were thinking of poppers. And a lot of people still do, by the way. Harry Haverkos is still quite convinced that amyl nitrite is a factor.

Hughes: Were you thinking in terms of cofactors?

J. Greenspan: Yes, a multiple-step thing, like you see in many other situations, where you get one agent causing an initiation, a promotion event, and then a magnification by another event. Probably not far away from the truth, by the way, as it subsequently turned out.

I was particularly interested in that, because with Ed Shillitoe, we'd been looking at multiple-step carcinogenesis involving herpes simplex virus in the mouth. It was a hypothesis that has subsequently fallen by the wayside, but was quite popular at one time, the idea that herpes simplex might be involved in oral cancer. Now we think of papilloma virus, and we didn't know about suppressor genes then.

So the notion was that immunosuppression might be a two-step event, with a virus infecting the host, and then other agents, like EBV infection, hepatitis, multiple antigen challenge, smoking, malnutrition, venereal diseases, and chemical agents, all contributing to the immunosuppression. It seemed perfectly logical. And it still does. I mean, that's not an outmoded hypothesis.

Hughes: Right. But I think the difference, at least if my reading of the history is correct, that the earlier mindset was either/or. It was either a virus, or it was poppers. I don't remember discussions in the early days about cofactors. Do you remember?

J. Greenspan: No, all I remember is Marc and others going up to that blackboard on the third floor in the dermatology conference room and writing the various candidates together, trying to do Ven diagrams and things like that. I don't think we excluded the possibility that they might interact.

American Cancer Society Grant

Hughes: When would you say that the group attained an identity as the AIDS group?

J. Greenspan: Probably not until we went and negotiated with [California assembly speaker] Willie Brown. When was that?

Hughes: That was April, 1983.

J. Greenspan: Then that was it, from then.

Hughes: Not for the American Cancer Society [ACS] grant application in October 1981?[1]

J. Greenspan: Well, you're right. The ACS was the genesis of an organized AIDS presence. The KS Study Club contributed to that; the lymphoma group was part of it. They fed into John Ziegler and Marc Conant and Paul Volberding leading the NCI grant effort, and I was part of that. I was the specimen bank.

Hughes: Go back a minute to the ACS grant, because that comes first.

J. Greenspan: That was the thing I was brought in on late.

Hughes: Now, was the specimen bank part of that application? Because I thought that was just to support the KS Clinic.

J. Greenspan: It wasn't part of the application, but it was because they had the flow of patients that they asked me to store serum. When was that? That was quite early.

Hughes: Well, the clinic is up and running with Helen Schietinger by January 1982, so the grant must have come in late 1981.[2]

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[1] Study of Kaposi's Sarcoma Epidemic in Homosexual Males. Application to Frank J. Rauscher, Jr., Ph.D., for a research development program grant, American Cancer Society, October 16, 1981. (John L. Ziegler papers, AIDS History Project Archives, Special Collections, Health Sciences Library, UCSF.)

[2] The ACS grant to establish a KS clinic at UCSF was awarded in December 1982. The clinic opened in January 1983 under the direction of Marcus Conant and Paul Volberding, with Helen Schietinger as nurse-coordinator. Michael Helquist. "What to Expect at the KS Clinic." Coming Up, March 1983. (Marcus A. Conant, KS notebook, 1983.)

The UCSF AIDS Specimen Bank

Initiation

Hughes: Tell me about those very earliest days of the bank.

J. Greenspan: The very first specimens were in 1982, but we didn't get very many. I could probably give you a date for the very first specimen [asks technician to find date].

Marc and Paul negotiated with me to do a bank, and we said we'd go for funding with the NCI. But in the interim, they wanted to start collecting specimens. So Marc Conant paid somehow or other for a technician to come in part-time and separate the blood and aliquot the serum and store it in my storage. We kept the records on a word processing machine; we had an early Videk word processor. We just kept a list of the specimens. That was in 1982. So it just started with no resources, really. Then the first funding I guess was with that NCI grant.[1]

Hughes: Which had a specimen bank built into it.

J. Greenspan: Yes. Not very much, but some.

Choosing a Director

Hughes: You were the logical person to run it because you'd been banking?

J. Greenspan: I don't know whether I was logical. [laughs] Things didn't necessarily have a logical [basis]. I don't know what happened exactly before they talked to me, but because I'd worked with John Ziegler in the lymphoma thing, he knew me. I had a nice little lab over in HSW [Health Sciences West

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[1] On May 12, 1983, UCSF Chancellor Julius Krevans announced that the National Cancer Institute had awarded a three-year grant of over $1 million "to support and expand" research on AIDS. (UCSF Receives National Cancer Institute Grant for A.I.D.S. Research. UCSF News/Public Information Services, May 12, 1983. John L. Ziegler papers, AIDS History Project Archives, Special Collections, UCSF Library.)

Building, UCSF] where I had been in the habit of storing serum, saliva, and tissue for my own work.

So as I understood it--this is all apocryphal--Marc Conant, who wanted to store the specimens, and I guess John Ziegler, had asked a number of people if they could store a few specimens in their freezer.

Hughes: Why didn't John Ziegler run the bank since he'd been doing it in Africa?

J. Greenspan: Well, I don't know. All I know is, I was invited to one of these lunches.[1] It was Conant and Ziegler. Volberding was involved, but he wasn't at the lunch. I hadn't met him, as a matter of fact; I didn't meet him until the site visit for the NCI grant. But they asked me to lunch, and we had the place mat, and they said, "What would it take?" And I just did a budget on the place mat and tore it off and gave it to them. And they said, "Well, that's wonderful that you'll do it, because nobody else wants to do it." I said, "I'll do it because we know how to handle infectious material, and because I want to be part of this. It's going to be very exciting, and I'd like my group and dentistry to be part of the [AIDS] research effort into this activity."

Hughes: And you were interested because of the oral manifestations?

J. Greenspan: No, because it was tremendously exciting. [receives note from assistant] No, my interests are not confined to oral things.

Early Specimens

Hughes: [reads note] "First specimen received November 16, 1982." Do you remember what it was?

J. Greenspan: Serum.

Hughes: As I remember, there were only two types of specimens that early--sera and lymph nodes?

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[1] Another repetition follows, but it provides slightly different information.

J. Greenspan: Well, lymph nodes and then KS biopsies. There were sera mostly from Marc's patients, and lymph nodes from Don Abrams, with serum from those patients, and KS biopsies and normal skin from the same [Abrams'] patients.

Hughes: Was there anything coming in from anybody else?

J. Greenspan: It was mostly Conant, actually. Second was Abrams. We started to collect from our own cases early on, because we would have been doing so anyhow; we just combined them with the bank. I didn't get anything from Volberding.

Hughes: Why?

J. Greenspan: I don't know. He tried to have his own bank. And then, goodness, I'd have to look up the records: When did we start getting stuff other than from clinics, other than from Conant, Abrams, and Deborah Greenspan? When did Harry Hollander start?

Hughes: 1983. The Adult Immunodeficiencies Clinic began to see its first patients in August.

J. Greenspan: We started to get specimens from Harry, as soon as he started. [tape interruption] We also received specimens from Andrew Moss.

Hughes: Now, he started collecting specimens early, because his letter to The Lancet appeared in 1983.[1]

J. Greenspan: Well, we started to bank for him right from the beginning.

Hughes: Was there a flood of specimens?

J. Greenspan: No. There were several hundred a year. I can get you all this information, this hard data, because we have information on who provided what and when.

Hughes: Grand.

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[1] A. R. Moss, S. Dritz, et al. AIDS in the "gay" areas of San Francisco. The Lancet, April 23, 1983, 923-924.

Staking Claims in AIDS Research

Donald Abrams, Paul Volberding, and Marcus Conant

Hughes: Did the NCI grant application push people to stake down territory, so to speak?

J. Greenspan: Yes.

Hughes: It hadn't been done up until then?

J. Greenspan: Abrams and the lymph node enlargement was a staked-out territory. Otherwise, I would say you're right. The NCI grant and the pursuit of funding for research did make people define what they were doing.

Hughes: Why Volberding as PI [principal investigator]?

J. Greenspan: I wasn't part of those negotiations.

Hughes: Ziegler was the senior researcher. He certainly was senior in age, but also in experience.

J. Greenspan: By many years. You'd have to talk to Ziegler about that.[1] You want my opinion?

Hughes: Yes.

J. Greenspan: My reading of it is that John was over at the VA, Paul was where the patients were, and they worked out a deal. It's a very good deal. John doesn't care about the limelight; Paul does, and did. John wanted it to happen; he wanted to have some influence over things. Paul wanted to be the center of it; he was a young man in a hurry, and it worked out very well. They had a wonderful partnership for ten years, you know.

Hughes: Yes, I know they did.

J. Greenspan: That's my interpretation of it. I wasn't there. You'd have to ask the principal partners how they worked that out. But it's very perspicacious of you to notice. And then of course, there's Conant throughout all of this, and he was sort of pushed aside.

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[1] See the oral history in this series with John L. Ziegler.

Hughes: Yes. We talked about why he might have been pushed aside, and you said, because of his strengths in areas other than administration.

J. Greenspan: Exactly. By the way, yesterday I was at a symposium with him. The American Academy of Dermatology has a summer conference downtown and we were on a panel together, and he gave a talk. He was spectacular. He just gave an impassioned sermon. He should have been a cleric, actually. He gave a sermon to the dermatologists about how they and the government and the people are letting down the patients. It was just wonderful, and that's his strength. Vision, create a vision and articulate it, and that was his strength, and still is, in my view. He's become a national leader in that area.

Hughes: A liaison, wouldn't you think, among the various factions?

J. Greenspan: Oh, absolutely, and as a person to persuade people to get involved in things. He really was another reason why I got involved in AIDS, because I just thought very highly of him, and he put it in a way that made it intellectually appealing, and I wanted to be part of it. And I still feel that.

Hughes: Had your association with him preceded AIDS?

J. Greenspan: Oh, yes. We knew each other long before that--as soon as I came here in 1976. He was a dermatologist who helped us with lectures in our courses for dental students. We became acquaintances. Before the AIDS thing started, or about the same time, 1980 or 1981, we got involved in one of the initial studies of Rogaine, of minoxidil and hair regrowth.

Hughes: Oh, yes, much in the news at the moment.

J. Greenspan: That's right. With Vera Price, who's a dermatologist. She was then at Kaiser. She's now full-time here. So we were already collaborating. Actually, he wasn't collaborating; he put us together. He was a facilitator. We interacted on a number of things.

Hughes: But not on herpes? Because he had been quite involved in herpes.

J. Greenspan: Yes, I don't know why that was. Ed Shillitoe and I were more interested in the oral cancer aspect, rather than the acute skin and mucosal lesion.

Hughes: And he was studying the venereal.

J. Greenspan: Yes. We weren't interested in it as an infectious disease. So we haven't really interacted on that, but we were campus acquaintances. So he was a very important factor in bringing many of us into it [AIDS research].

UCSF's Attitude to AIDS

Hughes: What was the attitude of the institution?

J. Greenspan: From the administration at that time, we got a feeling of acceptance of the necessity of being seen to be doing something about AIDS, but no real enthusiasm.

Hughes: But was there also the idea that this epidemic was probably a passing thing?

J. Greenspan: Yes.

Hughes: Did this attitude foster a feeling of group solidarity amongst the AIDS researchers? Is there somewhat a feeling of us against them?

State of California Funds for AIDS Research

Meeting with Willie Brown, Los Angeles, April 1983

J. Greenspan: Yes. Well, it really came to a head with the "Gang of Nineteen" (more or less) who went behind the university's back for funding.

Hughes: Right. Talk about that.

J. Greenspan: It's a very interesting story, actually. I was already chair of the Academic Senate here, so I was an involved senior faculty member. But again, the organizer was Marc Conant. Marc's connections to Willie Brown, I'm not sure what they are, but they were good, and Marc and Willie had been in contact. Marc was pushing very hard for both the city and the state to put money into AIDS research. He wanted the city to put $800,000 or $1 million, and he wanted the state to put a couple of million, into a crash research program.

Through his contacts with Willie, he got word that we needed to petition Willie Brown. So they set up a meeting in Willie Brown's office down in the state or federal building in Los Angeles. We all went down, and it was Art Ammann and me and Dan Stites and Marc Conant and I guess Don Abrams. I don't remember who else went. Jay Levy. And there were people from UCLA and people from UC San Diego.

Hughes: Did Merle Sande go?

J. Greenspan: No, Sande came in later. Merle was more on the establishment side of things. He got interested once the money came on board, and they persuaded him to be the first chair of the task force [Universitywide Task Force on AIDS],[1] but that was a year later.[2]

Hughes: There also is another task force, with Sande as chair, which is what you probably think of as the infection control committee. It was actually called the UCSF Task Force on AIDS.[3]

J. Greenspan: Oh, that. You see, that's the [source of] NEJM infection control paper.[4]

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Hughes: Right, with Conte.

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[1] The task force is currently known as the Universitywide AIDS Research Program.

[2] In the summer of 1983, the university created the task force, with Sande as chair, to manage and distribute the $2.9 million which the California legislature had appropriated for AIDS research. (William B. Fretter to J. Michael Bishop, et al., July 28, 1983. UCSF AIDS Coordinating Council papers, UCSF Faculty/Alumni House, tan binder: AIDS Coordinating Council Historical Report.)

[3] The task force is now called the UCSF AIDS Coordinating Council.

[4] J. E. Conte, W. K. Hadley, et al. Infection-control guidelines for patients with the acquired immunodeficiency syndrome (AIDS). New England Journal of Medicine 1983, 309, 12:740-744.

J. Greenspan: With Conte. It was superb. It's still absolutely sound. So he [Sande] got interested, but he wasn't one of the original movers.

The original movers were Jay Levy, Art Ammann, John Ziegler, Paul Volberding, Don Abrams, Dan Stites, Larry Drew, and me. There were no women to start with; Diane Wara came in a little bit later through Art Ammann. I don't think she was involved in the meeting with Willie Brown--

Hughes: No, she wasn't.

J. Greenspan: That's eight.

Hughes: [Conrad] Cassavant?

J. Greenspan: Cassavant worked for Stites. Cassavant was Dan Stites' lab manager. He wasn't at the PI level. Oh, Girish Vyas, in laboratory medicine. He was somewhat peripheral, but he was there. Winkelstein was somewhere out there, but not at the time the legislation was going through.

Hughes: He comes in a bit later.

J. Greenspan: Yes, he came in later. Who else?

Hughes: Andrew Moss went to the Willie Brown meeting.

J. Greenspan: Andrew Moss was there right from the beginning. Good.

Hughes: Well, give me a feeling of what went on at that meeting.

J. Greenspan: Big conference room, big table. We all sat around the table. I don't remember who chaired it, but I guess it must have been Conant. To start with, there were the investigators from here, UCLA, and I think San Diego. I always say it was nineteen of us; it may or may not have been, but that's what I always say. And there were representatives from [Senator David] Roberti's office, from Willie Brown's office, and there may have been others.

We spent the best part of a day, first of all agreeing upon the subject areas that needed money, and then going away and huddling in little groups and generating a budget.

Hughes: Off the top of your heads.

J. Greenspan: It was most extraordinary. And then Willie Brown came and had a little bantering session with us, and basically said, "If you come up with a good budget, I'm going to force this through." He was powerful in those days, and he could, and he did.

Hughes: Why was he easy to persuade?

J. Greenspan: Well, I think he was convinced that AIDS was an important problem, and the gay community an important part of his constituency. He was an assemblyman from San Francisco, wasn't he? Still is.[1]

Hughes: Right.

J. Greenspan: And he has an affinity for underprivileged groups, and I think he sincerely was committed to it. I don't think it was disingenuous or simulated in any way. I thought it was absolutely sincere. He convinced me that he was on our side.

The University's Reaction

J. Greenspan: I knew the university: I was already chair [1983-1985] of the campus [Academic] Senate; I was part of the [University of California] systemwide Academic Council [1983-1985]; I knew the dangers of going behind the [UC] president's or the regents' backs. I mean, you can see the consequences on the careers of many of the people who were in that room. [Michael] Gottlieb is no longer with us; Conant is no longer significant in terms of the university; Art Ammann has left. Those occurrences, I'm sure, are purely coincidental, but nevertheless, doing an end run for budgetary matters to the [California state] Assembly around the backs or around the sides of the president or the regents is a potentially career-destroying move.

Hughes: And you realized that at the time?

J. Greenspan: Yes, absolutely.

Hughes: Why were you willing to take the risk?

J. Greenspan: Because I was completely convinced that it was the right thing to do.

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[1] Willie Brown is mayor of San Francisco, as of 1997.

Hughes: Why?

J. Greenspan: Because I saw the scope of the [AIDS] problem, and I also was able to engineer that the vice president, Conn [Cornelius L.] Hopper was Special Assistant, Health Affairs. Hopper, whom I knew through my systemwide activities, was not in fact hostile to what we were doing.

Hughes: In what regard?

J. Greenspan: Bringing money in.

Hughes: But he couldn't come out and say that the way you had gone about it was acceptable.

J. Greenspan: No. But I could. Under freedom of faculty expression, one could do that, so one did it.

Hughes: Well, you did get away with it--

J. Greenspan: Yes.

Hughes: --but not without a bit of turmoil in the process, because as you probably well remember, people came out of the woodwork, wanting this money.

J. Greenspan: Right, there was a feeding frenzy. And when the funds came on board on this campus, they didn't know what to do with it. We had a meeting with Holly Smith and Merle Sande and Rudi Schmid in which they didn't want to pass the money on to us.[1] We'd written these budgets and got Willie Brown to get the money. When it came on the campus, $600,000 identified for us, they quite rightly said, "You've not been through peer review." We then had to go through a whole process of writing grants for the money that was earmarked for us. In fact, Art Ammann never got it, and Jay Levy didn't get his centrifuge until it was too late.[2]

Hughes: Had you assumed that you wouldn't have to go through peer review?

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[1] For Smith's and Schmid's viewpoints, see their oral histories in the Department of the History of Health Sciences, UCSF.

[2] For more information on their funding problems, see the oral histories in this series with Arthur Ammann, M.D. and Jay Levy, M.D.

J. Greenspan: Correct. We thought this was an emergency subvention; it would come straight to us.

Hughes: And the money would go strictly to this group that applied to Willie Brown? It would not be open to other researchers?

J. Greenspan: That's right, to start with; we thought for the first year. Quite correctly, the administration said, "You can't do that." So we had a bit of a to-do with them, and they created the Universitywide Task Force; they made Merle Sande the chair, and we worked our way through it. But it was difficult for some of the people who didn't have an insight into the way the university works to accept that, such as Art Ammann and Jay Levy, who were very distressed by it.

Hughes: But you were accepting?

J. Greenspan: I wasn't as bothered, for a few reasons. First of all, I realized that the wheels of a bureaucracy such as ours do grind at their own pace. Secondly, my own feeling on principle was that there had ultimately to be a peer review process. And although I would have accepted the distribution of the money on an emergency basis for one year, directly to those who had been the supplicants, my own feeling was that as soon as possible it should become a peer-reviewed, open competition. So I was somewhere in the middle. And remember, my own stake in it was very small. I was in it for $30,000 for a specimen bank. It was a service function; I wasn't in it for my own research.

Hughes: What about the people who really were dependent on that money for doing their research?

J. Greenspan: For them, it was a disaster, because they expected the money immediately. Jay Levy and Art Ammann are the examples I give. The distribution of funds was delayed a long time; six months I think. I don't remember.

Hughes: And they couldn't get funds somehow from other existing grants?

J. Greenspan: Well, you can't, you see. Federal funding takes a couple of years. We were in a hurry.

Hughes: I mean moving money from one pot to another.

J. Greenspan: Well, apparently they couldn't. I don't know. So it was a difficult situation. And even to this day, Art Ammann has never really forgiven that process. He reminded me of it the other day. We were talking about the fact that you were doing this oral history project, and I teased him. I said, "Did you ever get your money?"

Hughes: No, he didn't, and he resigned from UCSF as a result.

J. Greenspan: Partly from that, I think.

More on the Specimen Bank

Early History

Hughes: Well, let's return to the specimen bank. We talked about the early funding. How much of the NCI grant was to support the bank?

J. Greenspan: Not very much. I don't remember.[1]

Hughes: What is the development of the specimen bank, once you got the NCI funds, from the informal situation that arose in connection with the KS Clinic?

J. Greenspan: Well, we were able to accept serum and tissue at any time. We were able to maintain the tissue in liquid nitrogen. We were able to buy a freezer for the serum. I was able to pay part-time salary of one of my technicians to look after the specimens and to keep the records. We were able to respond to correspondence from people who wanted specimens. We were able to create a little tissue committee. So the whole thing became a reality instead of being a back-pocket, ad-hoc phenomenon.

Hughes: How did people learn that there was an AIDS specimen bank?

J. Greenspan: I don't remember. I think we announced it at the KS Study Group. We announced it at the [Universitywide AIDS] Task Force. All the investigators knew about it. And we used to have these meetings. When did we stop having Conant's and start having Levy's? For a while, Levy ran Wednesday afternoons.

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[1] $68,883 was requested for the specimen bank; the interviewer did not find a record of how much was received. (Studies of acquired immunodeficiency syndrome (Kaposi's sarcoma and opportunistic infections). National Cancer Institute, application receipt date: October 22, 1982. JSG papers, 89-0117, carton 2, folder: Conant, M.A.: JG/Beckstead etc. 1982.)

Hughes: What was Wednesday afternoon?

J. Greenspan: Seminars. I don't remember when they started. We used to share our research, you see. We did it at the KS Study Group, and we told people about the specimen bank there.

Hughes: Were these seminars exclusively for the KS Study Group?

J. Greenspan: No--it was called AIDS by then. When did the term come in, August 1982?

Hughes: Yes.[1]

J. Greenspan: So this is after that, and we didn't give them a name, but they were research seminars on AIDS. We talked about the specimen bank there; we talked about the specimen bank at the KS Study Club. We must have had meetings of some kind of executive group starting back then, but I don't remember.

Hughes: Well, there was a tissue committee going back to the KS Clinic.[2]

J. Greenspan: Well, then that's when it started, and it was some of these very names that I've given you. We tried not to have formal meetings. We tried to do it at the end of a KS Study Group or when we were meeting for some other purpose, or else Delphi; I'd send it around and say, "If anybody doesn't like it, now is the time to speak up." Once or twice they'd say, "Well, we don't want you to do that [send out a specimen] because we're doing [research on] it, or we don't want you to do it because we think this person is not a good scientist." But by and large, we responded to all of the inquiries.

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[1] According to Nussbaum, the Centers for Disease Control adopted AIDS as the official name of the disease on July 27, 1982. (Bruce Nussbaum. Good Intentions: How Big Business and the Medical Establishment Are Corrupting the Fight Against AIDS. New York: The Atlantic Monthly Press, 1990.)

[2] As of early 1983, members of the AIDS tissue committee were Drs. Abrams, Ammann, Cassavant, Conant, Drew, Greenspan, Levy, Moss, Stites, Volberding, and Ziegler. (Helen Schietinger to Kaposi Sarcoma Study Group Tissue Committee, January 3, 1983, Marcus A. Conant, KS notebook, 1983.)

Sending Sera To the Pasteur Institute

Hughes:	Were there inquiries from people at UCSF for specimens?
J. Greenspan:	At UCSF, at other northern California or California campuses, and as far away as Germany and England and France. We sent hundreds of specimens to Françoise Barré-Sinoussi so she could validate their test [for the AIDS virus]. That was an important event, that, and it's not really been fully documented, the fact that she used our sera.
Hughes:	That was 1984. I have some of the documentation.[1]
J. Greenspan:	I know we sent several hundred serum samples, because that was the first time that I shipped stuff internationally. Dedondé, the director of the [Institut] Pasteur, came over, and we had a big cocktail party. There was a scientific attaché to the French embassy and we worked through him, and he gave me some letter that allowed the stuff to go through French customs without being held up so it didn't thaw.
Hughes:	Were you apprised of the results of their research?
J. Greenspan:	Oh, yes. We were in no doubt that they had discovered the virus.
Hughes:	Before Heckler made her announcement?[2]
J. Greenspan:	Oh, yes, absolutely. We had antibody data from LAV. When was the Heckler announcement?
Hughes:	April 1984.

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[1] Andrew R. Moss to John S. Greenspan, June 27, 1984; John S. Greenspan to [Françoise] Barré-Sinoussi, July 9, 1984. (JSG papers, CN 92-0123, carton 2-92, folder: OAC-ASB Barré-Sinoussi, F.)

[2] On April 23, 1984, Margaret M. Heckler, Secretary of Health and Human Services, announced that Robert Gallo and his group at NIH had found a virus, human T cell leukemia virus-III or HTLV-III, which they believed to be the cause of AIDS. Three days earlier, the New York Times had reported that Luc Montagnier and his group at the Pasteur Institute had isolated a virus, lymphadenopathy associated virus or LAV, which they believed to be the cause of AIDS. (Lawrence K. Altman. New York Times, April 24, 13; Virus identified in France possible cause of AIDS. New York Times, April 20, 1984.)

J. Greenspan: Actually, we knew about it before then. I've probably got the results somewhere.

Hughes: Were you also hearing what the Gallo group was doing?

J. Greenspan: I don't remember Gallo's name at that stage. But we must have, because I remember the rivalry.

Hughes: Well, you might have heard something through Jay Levy.

J. Greenspan: Right. The third arm. I know that we did the tests here with Jay's reagents, we sent the stuff to Barré-Sinoussi, and she did anti-LAV antibody assays. We were in no doubt that they had discovered the virus, and that Jay was close behind them.

Prioritizing Specimen Recipients

Hughes: I found a document prioritizing who was to receive specimens.[1] At the top, understandably, were members of the bank itself. Then came UCSF researchers in general. At the bottom of the heap were those without direct connections with the UC system.

J. Greenspan: Yes.

Hughes: And yet, it was maintained that the tissue committee had not denied any "scientifically sound request."[2]

J. Greenspan: Right. How did we reconcile that?

Hughes: Yes.

J. Greenspan: Well, in the early days, we filled every request except for one or two where people wanted to do research that one of our people was already doing, or one or two where we decided we didn't want to work with those people.

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[1] Minutes, Universitywide Task Force on AIDS, January 25, 1984. (JSG papers, CN 92-0123, Carton 3-92, Folder: UC Universitywide Task Force on AIDS.)

[2] Draft: Proposal for clinical trials in AIDS. University of California, San Francisco AIDS Clinical Research Center, October 11, 1985. (JSG papers. CN 92-0123, carton 2-92, folder: AIDS/Clinical Trials Center [1985].)

Hughes: There's a letter responding to a request from Edgar Engleman--signed by Volberding, not you, because Volberding is head of the tissue committee--

J. Greenspan: Right. I wrote the letters, and Volberding signed them. We refused the request because he wanted to--what did he want to do?

Hughes: He wanted to use monoclonal antibodies to analyze lymphocytes from AIDS patients. Volberding replies that the proposal overlaps with "several ongoing collaborations we have established."[1] Was it his research that it was overlapping?

J. Greenspan: I don't remember. It was a difficult decision for me, because I'd known Ed Engleman for ten years, since he was a resident in rheumatology when I was over with Norman Talal. He was a personal friend. He's a wonderful man. It took him a little while to forgive us for that. I don't remember what he wanted to do. [tape interruption]

Hughes: It involved T cells.

J. Greenspan: Well, then Stites was probably doing it. Remember, for T cell subsets, they need fresh blood, or else separated T cells, and that was a lot of work. It's not just providing serum; it's a lot of work. And that would probably have been a decision made by Paul rather than the specimen bank in the sense that it wasn't stored frozen material; it would have required fresh material to go straight over there.

I remember now what Ed Engleman was doing: Ed had one of the early cell sorters. He was working with Beckton Dickinson. We had our own setup. We were trying to do it with a chap in neurosurgery who had the first FACS [fluorescent-activated cell sorter] machine here on campus. Then we got one lent to us, I think, that Dan Stites had with Conrad Cassavant. So that would have been why Paul wrote to Ed Engleman, Jr. He's a very heavyweight blood banker now at Stanford, but when I first knew him, he was a rheumatologist.

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[1] Edgar G. Engleman to Paul Volberding, June 17, 1983; Paul Volberding to Edgar G. Engleman, June 26, 1983. (JSG papers, CN 92-0123, carton 2-92, folder: AIDS Tissue Committee.)

I think we turned down Harold zur Hausen, who wanted to look for papilloma virus in KS, and Harold zur Hausen subsequently became our close collaborator in the work on hairy leukoplakia, so I had to do a bit of explaining to him when we met. But it was because KS tissue was so precious at first. He was very European and said, "I've got a good idea. Please send me the material," and didn't really explain it. We weren't prepared to collaborate with someone who didn't fully reveal what their protocol was.

Then Ashley Haase wanted to look for hepatitis [B virus] using the newly developed in situ hybridization technique, and we provided him with material, and he didn't find hepatitis B in KS lesions.

Hughes: Where was he?

J. Greenspan: He was still here at the VA, but then he moved to Minnesota. Ashley Haase was one of the developers of in situ hybridization.

Hughes: Do you remember the year?

J. Greenspan: It was early; 1983.

Hughes: That was cutting-edge technology?

J. Greenspan: Oh, yes, absolutely. But I don't remember it ever being published.

And then several groups wanted to use serum from patients to look with immunofluorescence technique at the tissue from the same patients to see whether they could find evidence of an agent. I think in the end, Art Ammann did it here. So we turned some other people down.

Hughes: Usually creating unrest?

J. Greenspan: No, I think even in those days, people could get specimens somewhere else. We've never been the only game in town.

The UCLA AIDS Specimen Bank

Hughes: Where else could they go?

J. Greenspan: Well, people in UCLA and in New York would provide serum.

Hughes: As I remember, the UCLA bank very early stored blood, and UCSF only came in later.[1]

J. Greenspan: I didn't know that.

Hughes: What about the specimen bank at UCLA?.

J. Greenspan: Well, the first I know about UCLA was probably 1984, after the specimen bank here was established and was funded by the then-task force. I went to a task force meeting and presented our protocols, and they came to see me. It was actually John Fahey who was Robert Mitzunasu's predecessor, I think, as the founder of their equivalent of our ACRC [AIDS Clinical Research Center]. They called it the Center for Interdisciplinary Immunological Research. He came to me and looked into our protocol, and went away with it all. But they may have been storing serum before that, using another protocol.

Hughes: I'm distinguishing sera from blood.

J. Greenspan: They were storing whole blood? How would they do it--cells?

Hughes: I believe so.

J. Greenspan: I didn't know that.

Hughes: You began to store whole blood in 1985, and saliva.[2]

J. Greenspan: Yes. We didn't do blood cells for very long, because it's very expensive. It takes a whole day to separate a few blood cell samples. We did it for Volberding for about a year and a half, but it was too expensive and we stopped doing it. Funnily enough, we're starting to do it again for the women's studies ten years later, but we're funded now. We couldn't afford it before. It required a whole [full-time] technician.

Hughes: What sort of studies did that cut out?

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[1] Universitywide Task Force on AIDS, Specimen Banking Committee meeting, January 25, 1984. (JSG papers, CN 92-0123, carton 2-92, folder: UC Universitywide Task Force on AIDS.)

[2] John S. Greenspan to University of California Task Force on AIDS, May 9, 1985. (JSG papers, CN 92-0123, carton 2-92, folder: UCSF AIDS Specimen Bank Grant.)

J. Greenspan: It would have cut out long-term sequential analysis of the virus in those cells. It would have cut out trying to do batch testing for CD4, CD8, which became outmoded and unnecessary as cell sorters became standard laboratory equipment.

Flow Cytometry

Hughes: Now, explain--

J. Greenspan: In those days, there weren't many cell sorters around, so it made sense to work with someone who had one, and to send them a batch of samples to analyze instead of dribs and drabs of one or two. Now that's unnecessary because there are thousands of the things around. You can have a cell sorter work on your specimen any time of the day or night. But in those days, for a while, we thought we might have to batch it. And we were also interested in culturing things from the cells.

Hughes: Did you get your own cell sorter?

J. Greenspan: I didn't, but Dan Stites got one lent by--

Hughes: Beckton Dickinson.

J. Greenspan: I think it was Beckton Dickinson or Coulter.

Hughes: So you no longer relied on the neurologist?

J. Greenspan: Well, I don't think we ever really did rely on the neurologist. I think we did some initial forays and quickly Dan got his own, but I don't know the date. We might have included a request for one in one of the grants. We may have had it in the NCI grant application in 1982.[1] The machine was just being invented by then. I'm talking about within months of the thing being invented, you know. The man who invented that, Mack Fulwiller, subsequently came and worked here. That's another story for another time.

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[1] The budget of the NCI grant makes no mention of a cell sorter. (JSG papers, CN 890117, carton 2, folder: Conant, M.A.:J.G. Beckstead, etc. 1982.)

Computerization

Hughes: In connection with the bank, beginning with the NCI application in 1982, there was a reqest for a computer component. Did that come about?

J. Greenspan: Oh, we were all hooked on computers, particularly Marc Conant. We realized we were dealing with more information than any of us had ever dealt with. Marc particularly got this bug in his bonnet that we needed a VAX, I think it was called. You could probably put it in your handbag now, but in those days, it was a big computer. It might have had a megabyte of memory, you know. And we were absolutely fixed on getting this thing and getting all the records of all the patients in it, accessing all the information about the specimens, and then the patients' social and sexual history and doing this big number-crunching. We got absolutely fixated on that. [laughs]

Hughes: Why do you talk in a disparaging way about it?

J. Greenspan: Well, simply because it wasn't long before having one's own computer became mainstream, before being able to use UNIX on-line was very straightforward. We were just a little bit hungry ahead of our time. The technology quickly caught up with us, by which time we had a bit of a white elephant on our hands, because we had finally succeeded in spending this fortune on this thing that by then was rather unnecessary.

Hughes: And that came in with the first NCI grant?

J. Greenspan: No, I don't think so. I think we asked for it. I think it took us several years to actually get it. I don't think we even got it from the task force money to start with.

Specimen Acquisition and Processing

Hughes: Please go step by step through the procedure of acquiring and processing a specimen.

J. Greenspan: Well, it starts in several ways. Right from the beginning, we accepted random accessions from clinics, from Conant's clinic, from Hollander's clinic, from our own clinic. And then, on prearranged protocols, we accepted much larger numbers of accessions from epidemiology cohorts. To start with, Moss's, then [Julie L.] Gerberding's health worker study. What were the other cohorts? The women, AWARE [Association for Women's AIDS Research and Education].

Hughes: Which was [Constance B.] Wofsy's project?

J. Greenspan: Yes. We never really did much pediatric. Diane Wara has always done her own banking.

Hughes: Why?

J. Greenspan: Some people like to control their own specimens; they don't want to give them away. Then John Watters, the injection drug users. I don't remember when he came in. At one point, we had about eleven cohorts going through the bank, but I can't bring them all to mind. But Yvonne's [De Souza] got all of the records. In fact, we published a paper on it.[1]

Hughes: How actually do you receive a specimen? Does somebody have to go get it?

J. Greenspan: Well, it varies. From the clinics physically around here, we may go and get it, or they may bring it over. And then from San Francisco General, we received it on the shuttle every day. There would be a closed box. My technician [Yvonne] still does go down and picks it up on the shuttle, and then we bring it back. The blood is in tubes; the blood clots and the serum separates. Sometimes you spin it, and then you just suck out the straw-colored stuff, and then put it into little tubes which are pre-numbered, and you freeze them and log them into the computer. It hasn't changed very much since the early days. The technology has become more sophisticated, but the principles are identical.

And then a tissue specimen, we usually go and get from the clinic. Sometimes it comes to us already frozen. If we get it from the clinic, we freeze it there and bring it back and put it into the liquid nitrogen freezer.

Hughes: What about ownership?

J. Greenspan: Well, when people put things in a specimen bank, they technically accept that it's now in the common ownership of the group which runs the bank. That's technically it.

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[1] J. S. Greenspan, M. A. Conant, et al. The UCSF AIDS specimen bank. Laboratory Medicine 1991, 22:, 11:790-792.

However, the tacit agreement from the very beginning of this bank is that I've never given anything away without consulting the depositor.[1] That's why it's worked. So although they give up ownership, they still control the destiny.

We try not to give away the last of each serum specimen. We try to keep a milliliter, two milliliters of serum. Some of the tissue specimens have been used up; they don't last forever, either. Storing frozen is not a permanent process.

Hughes: Well, I was struck by the graphs over the years. There's a striking one that shows acquisitions and withdrawals from 1983 through 1986,[2] and every year, there are more--

J. Greenspan: Double the number of acquisitions.

Hughes: Yes, that too, but I was thinking that the acquisitions are always lower than the withdrawals.

J. Greenspan: Yes. Well, a withdrawal is a fragment of accession. Let's say you put in a serum specimen; it could be 10 milliliters. Now, a withdrawal might only be half a milliliter. A tissue specimen is a chunk of tissue; a withdrawal might only be a few ten-micron or five-micron slices. So we always got teased when we went to give the presentation that we were the only bank in the world that could give out more than it received. [laughter]

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[1] In a meeting in which a committee member from each UC campus reported on the status of AIDS specimens on campus, John Greenspan reported: "...contributors of specimens have considerable say as to whether their specimens can be used by other investigators." (University Task Force on AIDS, Specimen Bank Committee meeting, January 25, 1984. John S. Greenspan papers, carton 3-92, folder: UC Universitywide Task Force on AIDS.)

[2] See appendix.

Safety Procedures

Hughes: I saw references to the P2 biohazard room.[1]

J. Greenspan: Yes, from the very beginning, from 1982, the staff wore gowns, gloves, masks, and worked in a laminar flow hood.

Hughes: Was this common procedure?

J. Greenspan: By then, I was insisting my people do that whenever they handled blood.

Hughes: Were you following specific guidelines?

J. Greenspan: No, at the beginning, I was ahead of the guidelines, but quickly the CDC guidelines came out, by which time they became our standard.[2] But we were ahead of that.

Hughes: Were the CDC guidelines identical? You didn't have to change any of your procedures when they came out?

J. Greenspan: Not really. They were just common sense, actually. We knew we were handling an unknown infectious agent, so I tried to handle it as though it was hepatitis B right from the beginning. I didn't want any of my staff getting into trouble.

Reviewing Specimen Requests

Hughes: The review process for investigators wishing to use specimens was a function of the tissue committee. Was it as rigorous as a peer review system, or was it, "These are my buddies; we'll give them what they want."

J. Greenspan: Oh, no, it wasn't that. We used to meet, I think it must have been after the KS Study Group--

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[1] John S. Greenspan. UCSF AIDS Clinical Research Center, AIDS Specimen Bank: Progress report at 5/18/84. (JSG papers, CN 92-0123, carton 2-92, folder: State AIDS Task Force. Site Visit, CRC, 2/13/85.)

[2] Acquired immune deficiency syndrome (AIDS): Precautions for clinical and laboratory staffs. MMWR 1982, 31, 43:577-579 (November 5, 1982).

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J. Greenspan: --and talk about new proposals, like Vyas wanted us to go in with Winklestein on the San Francisco Men's Health Study. Paul would chair it, and I would present a request. I would have previously circulated the request, and the people would either say, "Nobody's doing this; it's fine [to release a specimen]," or, "We're not doing this, but we can't let them have it because we don't have the material," or, "We are doing this and it clashes [with UCSF research], and we can't let them have it," or, "We happen to know that this person has worked with X and never delivers. They just take the specimens and you never hear any more about it."

So it was informal in that sense, but it was also, I think, exactly as we described it in our protocol. But it wasn't peer review in the sense of an in-depth analysis. No, it was pretty quick.

Hughes: Wasn't the fact that the specimen bank was right here an advantage to the AIDS enterprise at UC?

J. Greenspan: I think so. In the early years, I think it was key, because it took all of the worry away from investigators of how to get their material looked after, and it took the worry away from people wanting to have a go at AIDS research of where to get specimens. Subsequently, it became very routine; everyone does it [banking]. But for the first three or four years, we were rather special, I think. I think we facilitated what happened, and saved a lot of investigators doing it, having to devote time to it, getting it wrong, having freezers break down because they weren't used to it, losing specimens, having them mixed up. Now it's completely routine, but in the early days, I think it was rather useful.

Hughes: Has banking been done for other diseases?

J. Greenspan: Yes, it's been done for cancer, and for collaborative lymphoma studies of the kind that Ziegler did in Uganda. And the microbiologists and tissue culture people have done similar things for years. So it wasn't unique. But AIDS focused our attention on banking, persuaded us or encouraged us to clarify the way we did things and to do them at a more intense and rapid level.

The Dean's Advisory Committee for the AIDS Clinical Research Center

[Interview 3: August 31, 1994] ##

Hughes: The Dean's AIDS Advisory Committee was created when Ziegler became director of the ACRC in July of 1985.[1] Do you know why?

J. Greenspan: We had a small grants scheme. I don't know how much money there was at that time, but for the last few years, it's been $300,000 a year for clinical pilot studies or other pilot studies, basic science, and social, behavioral science. The Dean's AIDS Advisory Committee to the AIDS Clinical Research Center acts as a study section or primary review group for those proposals. We usually have as the chair someone who's not been involved in getting money from the ACRC, often people who have not been involved in AIDS at all. That's how we brought Steve Hulley into AIDS research. The chair reports technically to the dean of the School of Medicine, but in fact acts as the supervising chair of a small study section advising the director of the ACRC whom to give the money to.

Hughes: Why at that particular juncture was it necessary?

J. Greenspan: Because the ACRC had grown, and it had gotten to the point where it couldn't be done by an ad-hoc arrangement. It needed a formal arrangement, needed to be under the aegis of the dean. And the then-dean, Rudi Schmid, with the advice of a number of people, tried to make the thing more in line with the way the university does things.

Hughes: Was the initial push from the dean's office?

J. Greenspan: Oh, I don't remember whether the push came from the dean's office or us, but there was a bit of each, I think. There were discussions. I was probably only tangentially involved in it, but I certainly supported the notion of having a peer review group rather than having the director and a couple of people make ad-hoc decisions. It was a lot of money, you see.

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[1] Draft: Proposal for clinical trials in AIDS. University of California, San Francisco AIDS Clinical Research Center, October 11, 1985. (JSG papers, CN 92-0123, carton 3-92, folder: AIDS/Clinical Trials Center [1985]).

Hughes: Why Hulley?

J. Greenspan: He wasn't the first chair. Ira Goldstein was the first.

Hughes: So I'm wrong about July 1985 being when the dean's committee was formed?

J. Greenspan: I'd have to look it up.[1] Well, I'm pretty certain that Ira Goldstein was the first chair. It was Ira, Steve, Ben Kaltreider, David Wofsy, and then Martin Heyworth.

Hughes: All non-AIDS researchers?

J. Greenspan: Well, let's go through them. Ira Goldstein was an immunologist and really didn't do any AIDS research. Hulley hadn't been doing AIDS research but got very much involved in it. Ben Kaltreider was not then an AIDS researcher, and David Wofsy does some AIDS research. Martin Heyworth is an AIDS researcher. I may have missed one in there, but I don't think so. I've been on it since the beginning. In fact, I think I'm the longest serving member, with Paul Volberding.

The committee reviews pilot grant procedures and recommends funding priorities to the ACRC director.

Hairy Leukoplakia

Discovery

Hughes: Would you talk about the discovery of hairy leukoplakia?

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[1] On August 2, 1985, Dean Rudi Schmid asked Hulley to chair "the Advisory Committee for the AIDS Center," and listed the nine additional individuals he had asked to serve on the committee. (JSG papers, CN 92-0123, carton 3-92, folder: AIDS/Dean's Advisory Committee, 1985.) No documentation was found indicating that the dean's committee existed prior to this date.

J. Greenspan: Well, when my wife Deborah first came onto the faculty in the late seventies,[1] she started to see quite a lot of oral candidiasis. The clinicians in oral medicine were all seeing it. In 1981, when the gay male syndrome started to appear, Marc Conant knew most of our clinicians, and he started to send patients over to Francina Lozada, Sol Silverman, and Deborah. They all started to see men with Kaposi's sarcoma, and Deb started to see even more people with candidiasis.

In 1982 or so, she started to talk to me about it. She said, "I'm seeing a lot of men with candidiasis, and in some of them, candidiasis doesn't go away. It's a white lesion on the tongue." So she asked me to see a couple of patients with her. I said, "Well, we'll have to get a biopsy. We don't know what it is. It's a leukoplakia. It's a white patch that doesn't rub off, doesn't respond to antifungal therapy. These men get Kaposi's; they get lymphoma," which we had helped discover. "Maybe it's precancerous."

So she started to biopsy, and over the subsequent year, she got about fourteen or fifteen cases together. I was the pathologist on all of them, and it was a very peculiar pathology, very strange, not like anything we'd seen before. It looked like a wart. So I started to investigate it.

Meanwhile, Deb kept records on all the patients, and discovered that they were developing AIDS very quickly. This was before the virus was discovered. They were obviously in the [AIDS] risk group: They were gay men; they had this lesion; they got sick, and they developed AIDS, many of them within a few months.

So by the end of 1983, we had accumulated I think twenty, twenty-four cases, and it was enough for us to really have a go at it. I got all the cases together, reviewed them all histologically. I said, "It must be a wart," and we started to look for papilloma virus. Pretty soon, I discovered there was some evidence of papilloma virus, but there wasn't any virus there.

Hughes: In a wart, you would always find papilloma virus?

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[1] Dr. Deborah Greenspan became a fellow and visiting lecturer in oral medicine at UCSF in 1976. For details, the reader is referred to her oral history in this volume, especially to her account of research on hairy leukoplakia.

J. Greenspan: Yes. But we found there was another virus. We did studies in my lab and in other labs, collaborated with other people, and we discovered that it was the Epstein-Barr virus. So when you ask, who discovered it, the answer is Deborah and I discovered it. Deborah takes precedence, because she was the person who realized that there was a new clinical entity, which she called hairy leukoplakia. I am the person who discovered that it was due to Epstein-Barr virus.[1] So we claimed joint discovery. [laughter] It's never been called Greenspans' leukoplakia, though.

Hughes: Was there anybody else involved?

J. Greenspan: Oh, yes, many other people. In the original clinical descriptions, we had a number of colleagues who were puzzled by this lesion, but never put two and two together, but sent us cases. And then in the virology, I worked with my technician, Yvonne De Souza. Her name is on the original paper. Viveka Peterson did the electron microscopy, and first saw an image of a herpes virus. Evelyne Lennette, who is a friend of ours--we'd worked with her on the lymphoma studies--was the person to whom I sent tissue who proved that it was EBV. And then subsequently, we worked with the German group who confirmed that it was EBV using molecular biology. That was the paper I wrote and published in the New England Journal of Medicine.

Hughes: Is that the zur Hausen group?

J. Greenspan: Yes. His name is Ullrich Karl Freese, and his name is on the New England paper.

Hughes: Now, this was a condition prognostic of AIDS.

J. Greenspan: It seemed to be, yes.

Hughes: What was the reaction of the AIDS community?

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[1] D. Greenspan, J.S. Greenspan, et al. Oral "hairy" leukoplakia in male homosexuals: Evidence of association with both papilloma virus and a herpes-group virus. The Lancet, October 13, 1984, 831-834. Also: UCSF research team identifies Epstein-Barr virus in oral lesion linked to AIDS. UCSF News/Public Information Services, December 9, 1984. J. S. Greenspan, D. Greenspan, et al. Replication of Epstein-Barr virus within the epithelial cells of oral "hairy" leukoplakia, an AIDS-associated lesion. New England Journal of Medicine, 1985, 313, 25:1564-1571.

J. Greenspan: I think they paid a lot of attention to it. They were looking for earlier and earlier signs of this disease. By 1984 when we published it, HIV had been identified, and we quickly then moved on to a paper that wasn't published until 1987. This was a very big study, which we published in the Journal of Infectious Diseases,[1] in which we showed that the vast majority of these men had HIV antibodies. We did this with Jay Levy. The vast majority of them, you could culture virus from the blood, which was difficult to do in those days, so they had very high levels of virus. And the large majority of them in a survival analysis developed AIDS more quickly than the rest of the HIV-positive population.

The first author on that paper in 1987 was Deborah Greenspan, and that was when we started our formal collaborations with epidemiologists. The epidemiologist we worked with was Norman Hearst. In fact, the work was done in 1985 and 1986, but it took over a year to get it published.

Hughes: Where was Hearst?

J. Greenspan: Hearst was here with Hulley. Hulley introduced us. I'd learned of Hearst because I knew Hulley from the Dean's AIDS Advisory Committee. And my subsequent epidemiologists have also all been provided to me on Steve Hulley's recommendation.

Epstein-Barr Virus

Hughes: In that first paper in The Lancet you spoke of both papilloma virus and EBV.

J. Greenspan: No, we spoke of papilloma virus and _a_ herpes virus. We didn't know it was EBV.

Hughes: Oh, you're absolutely right.

J. Greenspan: Well, we did know, actually, by the time the paper was published, but when we submitted it, we didn't.

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[1] D. Greenspan, J. S. Greenspan, et al. Relation of oral leukoplakia to infection with the human immunodeficiency virus and the risk of developing AIDS. Journal of Infectious Diseases, 1987, 155:475-481.

Hughes: Because you didn't have the electron micrographs?

J. Greenspan: No, we had the electron micrographs, but all herpes viruses look the same. HSV1, HSV2 [herpes simplex virus 1 and 2], VZV, EBV, CMV, and HSV6 and 7--all seven of them look the same. So we did histochemistry. That's what Evelyne Lennette did. And then we did DNA studies, which is what we did with Karl Freese.

Hughes: It seemed to me in that paper that you were as much interested in the virology as in the AIDS aspect.

J. Greenspan: Still are, still are.

Hughes: You postulated the interaction of papilloma and EBV viruses. Papilloma virus dropped out of the picture eventually?

J. Greenspan: Well, that's true, except you see, there was a strange story here. It stained for papilloma virus histochemically, very, very heavily. We spent years trying to work out that puzzle, and it wasn't an artifact. What it probably is is that EBV is present in such vast quantities that some tiny protein of EBV that isn't normally detectable or even present is expressed in large enough quantities to cause the papilloma virus staining. Or EBV induces the expression of a cellular protein which cross-reacts with HPV [human papilloma virus]. There is a little segment of one of the E regions of EBV--I think it's one of the E6 segments, a little bit of the genome--which actually produces a sequence that is homologous with a bit of papilloma virus. Or it may be the other way around--I think it's E6 of papilloma virus. I've written on this somewhere, and forgive me if I seem vague, but one's memory doesn't always serve one. There's some kind of homology, and we've never really gone beyond that.

Maybe that's why the histopathology looks very like papilloma virus. Maybe the EBV is acting biologically like a papilloma virus acts in causing the expression of cellular gene products which cause the cytopathology. And why should that be? Well, we don't know really.

But you're right: The two themes with hairy leukoplakia have always been its clinical and epidemiological significance in the progress of AIDS, and its extraordinarily interesting virology and epithelial biology.

Epstein-Barr Virus as an Epithelial Agent

Hughes: Well, another interesting aspect of the virology was the fact that EBV was epithelial--which apparently was not known before?

J. Greenspan: Previously, not very well known, that's right. Well, there were hints of it. This was a time when these things were coming together. For example, zur Hausen himself as a fairly young man in the seventies discovered, using very early DNA technology--he was the first to apply it to EBV and HIV--that EBV genome is present in small amounts in nasopharyngeal carcinoma. And I think he may have also been the person who explored that in Burkitt's lymphoma. See, you have to remember that zur Hausen trained with the Henles, who were the great herpes people, which is where Jay Levy trained, and so did Evelyne Lennette. There's a story here.

Evelyne Lennette[1] was a graduate student technician in the Henles' lab when they were studying EBV, and they wanted to know what this strange virus that was discovered in Burkitt's lymphoma did in the rest of the population. They were in the habit of taking serum samples from their lab personnel and themselves all the time. During the course of an interval between two such bleeds, Evelyne Lennette, a young woman, developed infectious mononucleosis or glandular fever.

When they did her EBV titers afterwards, they found that before the mono, she was EBV-negative, and after, she had very high titers of EBV antibody, indicating acute infection. That was the basis of the association between EBV and mono. She was the subject in the Henles' lab.

The Association of Hairy Leukoplakia with AIDS

Hughes: You spoke in session one of resistance to the idea that hairy leukoplakia was a new lesion associated with AIDS, but you didn't say why.

J. Greenspan: Well, I think at first there was some doubt as to whether it was really a new lesion or was a form of candidiasis, and that lingers on, because these things linger on in the literature. We're fairly convinced, and I think most informed opinion is, that hairy leukoplakia is due to EBV. However, its original unique association with HIV has not stood the test of time. We and others quickly showed that occasional rare cases of hairy leukoplakia with EBV are found in people who are immunosuppressed for other reasons, and you'll find such papers in my dossier there, which you can wander through.[1] Kidney transplant recipients, heart, liver, lung recipients, people who were on heavy doses of steroids for autoimmune disease, bone marrow recipients. Probably forty or fifty such cases have now been reported. In fact, I think people have stopped reporting them. So it does occur when the immune system is suppressed such that EBV can express itself.

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[1] According to Evelyne Lennette, Elaine Hutkin was the technician involved in the discovery of the etiology of infectious mononucleosis. The discovery occurred in 1967, seven years before Dr. Lennette joined the Henles' research faculty. (Evelyne Lennette to interviewer, 1/5/99.)

And finally, there have been very rare cases--and I'm not sure that I accept any of the ones that have been published--but there have been four or five cases in which people claim that individuals that are immuno-normal, immunocompetent, and not on steroids and not immunosuppressed, get HL. So it's the old story, if you discover a thing because of a very strong association, a very marked one, and then you get the tails at each side of the Gaussian distribution, you find the real story.

Hughes: Well, HL was the first oral lesion associated with AIDS--oh, no, candidiasis, of course, was first.

J. Greenspan: Yes. Hairy leukoplakia is the first lesion that was discovered because of the AIDS epidemic, and for a while, it was uniquely, and it still is predominantly, HIV associated. And that's its special characteristic. The other very special AIDS-associated pathology is AIDS dementia, of course, with a particular scan pattern and a particular histopathology.

Hughes: Are those the only two pathologies that are uniquely distinctive of AIDS?

J. Greenspan: Mind you, I have to say, I'm not sure that AIDS enteropathy doesn't have some characteristic features, but I just don't know. But the gut changes in AIDS.

Hughes: Here are two conditions that are prognostic, would you say, of AIDS?

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[1] See, for example: D. Greenspan, J. S. Greenspan, et al. Oral hairy leukoplakia in an HIV-negative renal transplant recipient. Journal of Oral Pathology and Medicine, 1989, 18:32-34.

J. Greenspan: Yes.

Dentistry's Involvement in the AIDS Epidemic

Hughes: This could have pulled dentistry right into the epidemic. Did it, and what was the reaction?

J. Greenspan: I think it has pulled dentistry in. It's not the only thing. But in the early days, it was the thing that pulled it in. Now our papers in The Lancet and the New England Journal of Medicine and the little review that Deborah did in a journal called Compendium of Continuing Education in Dentistry,[1] which you'd think would be an unknown journal, but in fact evoked an enormous amount of interest among the dental profession, because it's a very widely read journal. And there's a story to that too, I'm afraid.

The man who founded and is really the proprietor of the journal called Compendium was the very famous, illustrious dean of the School of Dentistry at the University of Pennsylvania, Philadelphia, Walter Cohen. And as it happened in the year 1984-1985, he was spending a sabbatical in my unit when I was chair of the Division of Oral Biology. His office was near mine. He became a friend, and when The Lancet paper came out, he came in clutching it and said, "You've got to do something for the Compendium." So Deborah summarized The Lancet article for the Compendium, and that got an enormous amount of attention among the dentists. So The Lancet got the attention of the physicians and the AIDS people and the CDC and the NIH, and the Compendium article and then other articles that subsequently appeared and talks and interviews got the dental profession's attention. I think hairy leukoplakia got a lot of attention, and I think it did help pull dentistry into the AIDS effort.

Hughes: At UCSF, it definitely did, because you've spoken about patient referrals from the various AIDS clinics to the Oral Medicine Clinic. Was that a fairly common pattern elsewhere? What was the interaction between medicine and dentistry?

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[1] D. Greenspan. Oral viral leukoplakia (hairy leukoplakia)--A new oral lesion in association with AIDS. Compendium of Continuing Education in Dentistry, 1985, 6, 3:204-209.

J. Greenspan: Enormously variable. First of all, we were not the only place where that was already happening. Jens Pindborg in Copenhagen followed us immediately, and groups in New York--Charles Barr, who's a good friend.

There were other places where a year or two later, or even five years later, academic dentists would realize what they had to offer to AIDS patients, and would try to set up similar clinics and get referrals, and that's happened in a number of places. And there are one or two places where the medical people, learning from us and others of the valuable role that dentistry can play in the epidemic, have in fact themselves recruited dental people and set up the clinics. That's happened in Atlanta; David Reznick has a wonderful clinic, and that was started because the AIDS M.D.s knew about our work, and they wanted someone to do for them what we were doing for Volberding and the others here.

So there have been a number of approaches to it, but I cannot say that it's been universal. There have been many places, and are many places, where we will speak to groups of physicians and they'll bemoan the fact that they cannot find dentists who are interested in the soft tissue lesions of AIDS.

Hughes: Really? I wondered whether it might be from the other end, that physicians were reluctant to include people outside their profession.

J. Greenspan: There's some of that too. It's an enormously variable thing. You see, the trouble is, particularly in this country, there isn't a very standard paradigm for the relationship between dentistry and medicine. It's either no relationship or some unusual relationship. It's like the weather in San Francisco: It's either glorious or very unusual, and there really isn't a standard. Now, in other places, that's not the case. In the U.S., there is a much stronger tradition of oral surgery and oral medicine as a part of medicine as well as of dentistry.

Associations between Medicine and Dentistry at UCSF

Hughes: Was it the AIDS epidemic that created the links between medicine and dentistry at UCSF, or did they preexist?

J. Greenspan: I think those links had been established in the forties by Herman Becks, who was one of the fathers of U.S. oral medicine. I think it was continued by Sol Silverman, who recruited me and Deborah, who had built a wonderful link with medicine, particularly in relation to cancer. That was the basis of Deborah's and my philosophy and approach to AIDS, but also of the AIDS referral flow. So no, it wasn't new; it had been going on here for forty years, almost uniquely so.

The only other place that I can think of that was as effective in its links with medicine would be Penn with the famous oral medicine program, and maybe two other places, Seattle and the NIH. Very rare. Whereas in Britain, it's pretty standard to have a consultant dentist who diagnoses the oral soft tissue lesions and often has a medical degree and is part of the team. It's never worked like that here.

The Oral AIDS Center, Department of Stomatology, School of Dentistry

Hughes: Well, speak to the Oral AIDS Center. Was there a time when it was formally established? Was what you were doing from the start of the AIDS epidemic the prehistory of the Oral AIDS Center?

J. Greenspan: Yes. In mid-1986, I went to see the dean of the School of Dentistry, John Greene. I'd been thinking about it for some time, and I had been talking to my colleagues, and I said, "John, it's time we really put what we're doing on the map and really start to make contributions. I'd like to start going for federal grants. I'd like to identify us as the key link between dentistry and medicine and AIDS, to take a local and national and international leading role." He said, "I agree, John, I'd like you to lead the effort. How would you like to do it?" I said, "I'd like to write a program project [grant application], get everybody together, and I'd like you to recognize us as a group within the school."

And we did that. We wrote the program project, we invited anybody who wanted to be part of it to submit proposals. We applied for a program project. We got turned down the first time, we succeeded the second time, and we got funding of $600,000 or $700,000 a year for five years.

Hughes: From whom?

J. Greenspan: From the National Institute of Dental Research. Somewhere in there, in 1986, we called it the Oral AIDS Center, and the dean asked me to be the director. And we went on from there. Maybe it was early 1987--I can't remember. I don't know if there's any sort of formal beginning date, but I do know that we celebrated the first anniversary at the end of January of 1988, so it was some time early in 1987 that we identified it as the Oral AIDS Center. It's really a "little c"; it is not a recognized Organized Research Unit in the university or anything like that. It's a school-defined center. We call those "little-c" centers. The Center for AIDS Prevention Studies is the same.

Hughes: It didn't involve hiring new people?

J. Greenspan: Well, it did, yes, but it was all on money that we brought in from the program project.

Hughes: Did you attract faculty because of it?

J. Greenspan: Well, it's the other way around. We invited anybody who was interested in working with us to apply to be part of it, and that was the basis of the collaborative cadre of faculty that we've had ever since. Occasionally, there's been a gap where we've gone out and brought new people in. In fact, the group we've got at the moment are all people that we brought in. Nina Agabian, for the candida work; Joe Palefsky for the EBV work; and our epidemiologist, who at the moment is also our statistician, Joan Hilton. We brought those all in and invited them to work with us, and they've become part of the group and now are the group.

The AIDS Clinical Research Center

Impetus for Formation

Hughes: Well, let's talk about the ACRC [AIDS Clinical Research Center]. In June of 1983, Dean [Rudi] Schmid wrote a letter to various investigators here suggesting, a "permanent organization to supervise, coordinate, and monitor [AIDS research] projects supported by public funds."[1] Was the formation of the ACRC just a matter of sufficient money coming in--?

J. Greenspan: No, no.

Hughes: Well, what was the impetus?

J. Greenspan: That was a whitewash. Just before that [April 1983]--I think I told you about this--a group of us went down and saw Willie Brown. Well, the Gang of Nineteen was successful, and Willie Brown ushered through the legislature AIDS research funding of whatever it was--$1.8 million--

Hughes: $2.9 million.[2]

J. Greenspan: Of which $800,000, I believe, or it may have been $863,000, came to UCSF. The dean got a check one day, or the chancellor--I don't remember who--and it threw them into a bit of a panic. The idea of Willie Brown's bill was that those of us who were doing AIDS research, who had proposed all of this, had actually given him a shopping list of what we wanted to spend the money on, and we wanted the money to come straight through to us--very unusual, very unorthodox, but very rapid. And that's the story of Jay Levy's centrifuge. He didn't get his centrifuge and so he didn't get the recognition as discoverer [of the AIDS virus].[3]

When the dean got this check, he realized that he couldn't just hand it out. So instead, he did what UC does in these circumstances. He established a buffer between the funding agency and those who would get the funds, who would then apply to that buffer, with peer review and with standards and with auditing and with all of the regents' checks and balances. That was what that was all about, and Marc Conant was the first director of the ACRC.

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[1] Rudi Schmid to John Ziegler et al., June 23, 1983. (JSG papers. CN 92-0123, carton 3-92, folder: AIDS/Dean's Advisory Committee, 1985.)

[2] AIDS Funds Allocated. San Francisco Chronicle, August 26, 1983. (Archives of the Gay and Lesbian Historical Society of Northern California, AIDS clipping file, folder:AIDS 8-12/1983.)

[3] See the oral history in this series with Jay A. Levy.

Universitywide AIDS Research Program

Hughes: Right. Well, there were actually two buffers. There's the ACRC, and then there is what now is UARP,[1] which was created at the same time.

J. Greenspan: Yes, that's the statewide committee.

Hughes: They were both created to deal with state money. I suppose the ACRC you could look upon as a local buffer, and the other one is a statewide buffer.

J. Greenspan: Yes. And we have to apply to them for that [state] money. We don't get it automatically. We have to reapply each year. So the UARP is fulfilling the regents' obligation to make sure that the money is doled out within the state. By the way, it's not just UC; it goes to all universities.

Hughes: Was that from the start?

J. Greenspan: Oh yes. Very unusual. And the [UCSF] Tobacco Research Program was modeled on it. The money comes to the university, and any not-for-profit institution in health sciences can apply.

Anyhow, the UARP fulfills the regents' obligation to the legislature to make sure the money is properly spent universitywide or statewide, and the ACRC fulfills the chancellor's and dean of medicine's and dean of dentistry's and all the deans' obligation to the president and regents to make sure that it's spent properly here at UC. So as you say, it's a complex federal university. You have to have these buffers, as I call them, at every level.

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[1] Universitywide AIDS Research Program (UARP) was originally called Universitywide Task Force on AIDS. A letter to Greenspan from Cornelius L. Hopper, Special Assistant, Health Affairs, to UC President Saxon, describes the application procedure for state AIDS funds and the intention to create a task force. (C. L. Hopper to John S. Greenspan, June 3, 1983. JSG papers. CN 92-0123, carton 2-92, folder: AIDS--State proposal.)

Tensions between UCSF and SFGH

Hughes: Well, the first directors of the ACRC were Conant and Volberding. Was that deliberate, the fact that Volberding was associated with the General, and Conant was associated with Parnassus?

J. Greenspan: I wasn't part of that process. Marc was the driving force behind getting the money, and was the political contact. Paul was the young man that was being brought in to build the AIDS program at the General. So your interpretation is certainly a plausible one, but I honestly cannot say that I know firsthand about what happened behind the scenes to determine that that would be the structure.

Hughes: Were there tensions from the start? AIDS activities began here on Parnassus, with the KS Clinic and the KS Study Group, but they very quickly moved for a multitude of reasons to San Francisco General. That's where the AIDS Clinic is; that's where the AIDS ward is. Surely that must have caused some grief?

J. Greenspan: Yes.

Hughes: Can you talk to that?

J. Greenspan: Well, I think you're right. I think there have always been tensions between UCSF and the General.

Hughes: Still are?

J. Greenspan: Yes, I think so.

Hughes: And how are they manifested?

J. Greenspan: Well, I don't think they're manifested at all, but I think they're there. I think the people at the General feel quite rightly that they have an enormous commitment to AIDS, and that there's an economy of scale by packing everything together, and that's where the patient flow is. There are some people here who feel that this campus [Parnassus] has let down the AIDS community and the AIDS epidemic and the medical world by not building on very real strengths we have here. I think there are tensions.

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J. Greenspan: I think it's fair to say that there was a policy decision made at a fairly high level that AIDS would be concentrated, not exclusively but largely, at the General. I could guess as to where that decision was made, but I probably shouldn't.

Hughes: Well, I saw a letter from Conant to Rudi Schmid in February, 1985, that implied--and it didn't take very much reading in --that greater cooperation was needed between the two campuses in regard to AIDS activities.[1] So I was wondering if indeed ACRC was created--

J. Greenspan: You could probably just change the date.

Hughes: What you're saying is change the date to any date you like and it would still be true?

J. Greenspan: Yes. And it's not necessarily a bad thing.

No, I don't think ACRC was created to paper over that kind of a problem.

Hughes: Well, not to paper over, but perhaps to coordinate more effectively--

J. Greenspan: Yes, that's certainly another interpretation. I must say I haven't thought of the ACRC from that point of view. I thought of it more as being a way of channeling the money out to investigators in a rapid and effective way. But now that you mention it, it also has had something of a unifying influence.

Hughes: Last time, I remember your saying that one of the people who never, as far as you could remember, contributed to the specimen bank was Paul Volberding. Is that somewhat symbolic?

J. Greenspan: I don't know; we never really talked about it. I had lunch with him today; it didn't come up. [laughter]

Hughes: It could be that he felt his territory was over at the General, and he wanted to be in control of it.

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[1] Marcus A. Conant to Rudi Schmid, February 1, 1985. (JSG papers. CN 92-0123, carton 2-92, folder: State AIDS Task Force Site Visit, CRC 2/13/85.)

J. Greenspan: It's entirely possible that you're right. I certainly didn't spend enough time thinking about it to interpret it. But that's entirely possible, now that you mention it, with the eye of the historian.

Hughes: There definitely were some tensions between the two groups. For example, Abrams wrote that he had consistently been omitted from the list of donors to the bank.[1]

J. Greenspan: Oh, my god!

Hughes: Do you remember that?

J. Greenspan: Yes.

Hughes: You've said, from the very early days, he contributed lymph nodes, right?

J. Greenspan: Very much so, yes.

Hughes: From his cadre of his patients.

J. Greenspan: Absolutely. He was one of the founders of the specimen bank.

Hughes: That omission was just an oversight?

J. Greenspan: I guess so. Or maybe he had stopped contributing.

Hughes: Not from the tenor of his letter. [laughter] He definitely was requesting that such an oversight not be repeated.

J. Greenspan: Right.

Relationship with the ACRC, Los Angeles

Hughes: The other relationship I'm interested in is between the ACRC here and the one in Los Angeles. What was the relationship, and was there any formal coordination?

J. Greenspan: Well, there were just the two centers to start with for a few years, and our relationship was one of distant cordiality. For example, we started our specimen bank before they did, and when they decided to start one, their leader for that--I can't remember whether he was director--was John Fahey, a very well known investigator. So John called me up; we'd never met, but I knew who he was. He came up the next day. He spent the day with me, took down details of everything we did, and went back and established a very nice specimen bank. So there was that kind of cordiality.

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[1] Donald I. Abrams to John L. Ziegler, August 15, 1985. (JSG papers. CN92-0123, carton 2-92, folder: OAC-ASB.)

I think Ziegler and Ron Mitsuyasu, director of the UCLA ACRC probably talked from time to time. I meet with Ron Mitsuyasu at UARP meetings maybe three times a year, and we talk. We certainly have a lot of respect for each other's programs, and for the third ACRC now at San Diego. But I don't think the collaborations are more concrete than that.

Hughes: And were never intended to be?

J. Greenspan: Well, I honestly don't know. That's a good question.

Hughes: Well, there was debate, I remember seeing in the minutes of the very early meetings of what became UARP about whether there indeed should be more than one ACRC.[1]

J. Greenspan: Yes, it's true, now that you mention it. I remember Merle Sande was the first chair of the UARP; he at one point wanted me to be the specimen banker for the whole of the university statewide activities.

Hughes: Why was that?

J. Greenspan: Well, he probably thought that the scale of the thing would be best accomplished in one place, but it quickly outgrew that. We didn't know how big the epidemic was going to be. Even when the task force got going in 1983, we didn't know. There were then still only a few hundred cases in California and a few thousand at the most in the country. We've now had 20,000 cases of AIDS in San Francisco. We had no idea how big it was going to be until HIV testing made it possible to identify healthy HIV-infected people.

Hughes: So it was a question of volume of specimens?

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[1] Minutes, Universitywide Task Force on AIDS Specimen Banking Committee Meeting, January 25, 1984. (JSG papers. CN92-0123, carton 3-92, folder: UC Universitywide Task Force on AIDS.)

J. Greenspan: Yes.

Hughes: Just one center would have been overwhelmed?

J. Greenspan: Yes. At one point--I remember now; I'd forgotten that--we did have a statewide specimen banking committee.

Hughes: Exactly.[1]

J. Greenspan: I had one meeting, and we got together. All we did was decide to share expertise, and that's why John Fahey came up.

Hughes: That committee was short-lived?

J. Greenspan: Yes. It never really got going because it was very clear that we each had to go our own way. So there was an exchange of expertise.

The AIDS Virus Diagnostic Laboratory [AVDL]

Hughes: There was also a debate about creating a central laboratory facility, which of course eventually was done at Davis, but the original decision was no.[2]

J. Greenspan: Yes. In fact, the AVDL only really functioned in the way that it was originally intended to do for a little while, and it's now petering out in the face of similar kinds of expertise everywhere.[3]

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[1] The creation of a "tissue sub-committee" is reported in the minutes of an early meeting (perhaps the first) of the state task force. (Universitywide Task Force on AIDS Workshop, December 12, 1983. JSG papers. CN 0213, carton 3-92, folder: UC Universitywide Task Force on AIDS.)

[2] Minutes, Universitywide Task Force on AIDS Specimen Banking Committee, January 25, 1984. (JSG papers. CN92-0123, carton 3-92, folder: UC Universitywide Task Force on AIDS.)

[3] The AIDS Virus Diagnostic Laboratory, established at the University of California at Davis in 1985, was joined administratively with the UCSF AIDS Clinical Research Center in July 1990. (Annual Progress Report, 1989-90. University of California, Universitywide AIDS Research Program, University of California Office of Health Affairs, January 1991, p.18.)

Hughes: You mean every institution can do its own laboratory work?

J. Greenspan: Well, the AVDL at one point got $400,000 or something. So it gives you an idea that the need was there; the need erupted. It was met with money, and now they're down to [checks file] $49,688. They once had something like ten times that much money. Everybody's doing their own testing in virology now, don't you think?

Hughes: It seems to be.

Mainstreaming AIDS Research

Hughes: What are your thoughts on how the ACRC may have played a role in mainstreaming or legitimizing AIDS research on this campus and at the university?

J. Greenspan: Well, if you make money in a particular field available to people, particularly young people, and it's not as readily available in others, they might find that their interests are in the direction of where the money is. That sounds awfully cynical. I always use the aphorism: "If you fund it, they will investigate it." And that's the idea. You stimulate research in a particular area by making some money available for pilot grants, by making an infrastructure available so that investigators don't have to reinvent the wheel and go out and find their own patients, get their own blood and tissues, and develop their own flow cytometer. That's the whole point about an infrastructure program.

And to that extent, I think the ACRC did succeed. I think it got a lot of people involved--I've mentioned a couple of them to you already--who otherwise might never have got involved in AIDS research. I think it encouraged a few who were interested but didn't have the wherewithal to get involved, and I think it gave something of a peer support system and a certain amount of mentoring help to people who otherwise might have drifted in and out.

Hughes: Well, the ACRC also presented a familiar organizational structure. In the beginning, AIDS research here didn't have much structure, and I think that's unsettling to the profession.

J. Greenspan: Give it a bit of structure, yes. It's not the only structure, of course; there is Volberding's CFAR, the Center for AIDS Research, and then there's the Chancellor's AIDS Coordinating Council, chaired by Merle Sande, which is mostly concentrated on occupational hazard issues.

Hughes: Right. But that's a recent development.[1]

J. Greenspan: Fairly recent, yes.

But you're right, the ACRC certainly has been one of the cementing mechanisms. I wouldn't want to exaggerate it. If people hadn't been wanting to do AIDS research anyhow, and if they hadn't succeeded extramurally in getting funds, it wouldn't have done that. But I think you can retrospectively say that it served that purpose, and if its million dollars a year hadn't been coming in for the best part of ten years now, we wouldn't see anything like the amazing AIDS research effort on this campus.

Just to give you a number, the last time I reviewed this, which was a year and a half ago, the campus' total extramural funding was $180 million, something like that, and out of that, $40 million a year was AIDS. I think it may be $40 out of $200 million, something like that. Approaching 20 percent of the total peer-reviewed extramural funding of this campus was AIDS research. It must be assumed, and I think we can even show connections, that the ACRC money has been leveraged; it was the basis for leverage into that funding. The money doesn't mean anything by itself, but it's the work that it represents that I think is so extraordinary.

So that's the view I would take. Others might take the view, "ACRC, what is that? What does that do?" People don't always know, you know.

Hughes: Do they know on this campus?

J. Greenspan: Some.

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[1] Chancellor Julius Krevans established the council in July 1988. Many of its members had served on the UCSF Task Force on AIDS, established in March 1983 to formulate AIDS-related infection control policy, or on the Technical Advisory Committee on AIDS, established by Chancellor Krevans in 1987 and with a focus on AIDS education. (Dianne Leiker. UCSF AIDS Coordinating Council: Historical Report. [n.d.] Binder: AIDS Coordinating Council Historical Report, AIDS Coordinating Council Office, UCSF Faculty/ Alumni House.)

Hughes: Not necessarily?

J. Greenspan: Not necessarily, no. It's a very complex environment here. We've not kept a high profile, the ACRC. We've basically seen our role as to serve the investigators, and it's not been a media thing at all. I don't know that everybody would know what it is and why it is there, actually. And I don't think it matters, if the job gets done.

The San Francisco Model of Comprehensive AIDS Care

Hughes: Well, we have to rush along, because you have to leave in ten minutes. Do you care to comment on the so-called San Francisco model?

J. Greenspan: I don't think I'm the best person to do that. There's no question that Cliff Morrison[1] on the nursing side and Paul Volberding on the clinical side put together a program which interacted with what the gay community was doing, in either an organized way or unorganized way, to support sick people, to produce a very cost-effective approach to AIDS care, with a heavy emphasis on outpatient [care], heavy emphasis on aggressive treatment, and not assuming people are just going to die. It placed heavy emphasis on psychological support and on just the physical support of having people come and give you a hug and make you a meal, which the gay community and the friends of the gay community have been so successful at. So at one time, the average cost per period of illness of an HIV patient was something like $140,000 in New York and $20,000 in San Francisco.

I don't think that's true any more. I think the gay community has been decimated by the disease. Many who were the carers have become the cared for or are gone. The external community's ability and interest in providing housing and financial support have not kept pace with the size of the epidemic. It may have even shrunk. And we're by no means any longer the epicenter of the epidemic. We're just one of thousands of cities across the world.

So I think the San Francisco model was an incredible way to go. I think it still is very effective here, but I would not see it as being unique or universally applicable or even in the longterm sense viable.

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[1] An oral history with Cliff Morrison is in progress.

The School of Dentistry's Response to the Epidemic

Hughes: We've talked about the School of Medicine's ambivalence in the early days about the epidemic. Was there a similar feeling in the School of Dentistry?

J. Greenspan: No. We had a dean, John Greene, who just stepped down last July [1994], who backed me and the others 100 percent all the way, all the time. He saw what we were doing as being appropriate for humanitarian purposes, a valid application of clinical skills, a tremendously exciting area for research, for bringing to the school an enhanced reputation for making a contribution to public health. Remember, this was the former Deputy Surgeon General of the United States Public Health Service. This is a public health dentist. So there was never a moment when John other than gave us whatever support we wanted that he could give us. He was really very much part of the success of that story.

And my predecessor as chair of this department, Paul Robertson, who is now the dean of the dental school in Seattle, was equally unambiguous in his support. I think the model that you see in dentistry is quite unrivaled on this campus of a top to bottom [AIDS] effort, not driven by the administration, driven by the faculty, but with complete support from the administration.

Hughes: Remarkable.

J. Greenspan: I think there's similar support in nursing. We're just trying to help them get going a bit more. But nursing has been very committed. And it's not meant as a criticism of medicine; the School of Medicine is so huge that it would not be reasonable to expect quite the same level of integration from the dean down to investigators.

Politicization

Hughes: Do you feel that you've become politicized as a result of being associated with the epidemic?

J. Greenspan: Yes, at many levels. At the national level, I and my colleagues are seen as advocating care for AIDS patients in a profession which has had mixed feelings about that. We're seen as having led the charge for infection control, which is not popular. We're seen now as being part of the charge to bring dentistry into health care reform, in order that all people should get care.

On the positive side, we're seen as having helped bring medicine and dentistry close together, and having raised the head of dentistry with pride in the general biomedical community, and have brought reputation. In the state, I think very many similar things. And within the school, I think it's become a very political thing. What we've done brought pride and excitement to many on the faculty, and to others it's been a source of distaste. Surprise, surprise. And then there's also the straightforward jealousy of success. [tape interruption]

Personal Contributions

Hughes: What do you consider to be your most significant contribution to the AIDS effort?

J. Greenspan: I think being in the right place at the right time, as my friends say of me. I can't unlink myself from Deborah--but being here at a time when my career and Deborah's career had prepared us. We were ripe to make the observations, to make the connections. Science is connections, you know. I was of a training and an inclination to collaborate and to serve. By making my laboratory available in terms of the specimen bank, I got to know everybody, and by being part of that, I was able then to bring them on board when I wanted to get widespread epidemiological studies of the oral manifestations of AIDS. So I think my contribution has been bringing all that together.

And then the hairy leukoplakia stuff. It was just a very nice combination of personal insights and interests that led to really rapid identification of Epstein-Barr virus. In retrospect, that was sort of a simple, straightforward thing that would have happened anyhow a year or two later. But we did it nicely and cleanly and without much controversy of a standard to get into the New England [Journal of Medicine], simply because of my training and approach as a pathologist, combined with the skills that I was able to bring to bear on the problem. So I would say those are two things, being able to bring people together and being in the right place at the right time.

Hughes: And having an organizational sense?

J. Greenspan: That's not for me to comment on, as Urquard would say.[1]

Transcribed by Shannon Page
Final edit and index by Celeste Newbrough

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[1] Dr. Greenspan refers here to a popular character in the contemporary BBC [British Broadcasting Company] series.

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University of California, San Francisco

CURRICULUM VITAE

Prepared: November 8, 1993

NAME: Deborah Greenspan

CURRENT TITLE AND DEPARTMENT:
Clinical Professor of Oral Medicine
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EDUCATION:

Dates Attended	Institution and Location	Degrees Conferred, Title or Status	Major subject
1958-60	Royal Free Hospital School of Medicine University of London, England	2nd BDS	Basic Sciences
1960-64	Royal Dental Hospital of London, School of Dental Surgery, University of London, England	BDS	Dentistry
1964	Royal College of Surgeons, England	LDS RCS	Dentistry
1976-78	University of California, San Francisco, Department of Oral Medicine and Hospital Dentistry	Fellow	Oral Medicine
1991	University of London England	DSc (Med)	Oral Medicine

LICENSES, CERTIFICATIONS, ETC.:

1964	Royal College of Surgeons of England, Licentiate in Dental Surgery
1964	Registered Dental Practitioner, United Kingdom
1977	National Board of Dental Examiners, Parts I and II
1978	Certificate in Oral Medicine

BOARD CERTIFICATION:

1985	Diplomate, American Board of Oral Medicine

PRINCIPAL POSITIONS HELD:

1964-65	Dental Group Practice, Wembley, England	Associate
1965-76	Private Practice and National Health Service	Dentist (Owner and director of two general dental practices employing three dentists and five staff personnel)
1972	University of California, San Francisco	Lecturer in Oral Biology
1976-83	University of California, San Francisco	Visiting Lecturer in Oral Medicine
1983-85	University of California, San Francisco	Assistant Clinical Professor of Oral Medicine
1985-1989	University of California, San Francisco	Associate Clinical Professor of Oral Medicine
1989-now	University of California, San Francisco	Clinical Professor of Oral Medicine

ANCILLARY POSITIONS HELD:

1987-now	Clinical Director, UCSF Oral AIDS Center

HONORS AND AWARDS:

1978-79	Fellow of National Cancer Institute, Department of Oral Medicine and Hospital Dentistry, University of California, San Francisco
1984-now	Faculty Member, Rho Rho Chapter, Omicron Kappa Upsilon, Dental Honor Society
1986	Award for Teaching Excellence in Oral Medicine from Class of 1987
1986	Woman of Distinction Award, London, UK
1988	Fellow, American College of Dentists
1988	Annenberg Lecture. Alpha Omega Dental Society. London, England.
1989	Samuel Charles Miller Award, American Academy of Oral Medicine
1989	Seymour J. Kreshover Lecture, National Institute of Dental Research
1989	Assistant Secretary for Health, Certificate of Commendation
1990	Honorary Degree, Doctor of Science, Georgetown University, Washington DC
1991-now	Honorary Lecturer, United Medical and Dental Schools of Guys and St. Thomas Hospitals, University of London, England
1991	Honorary Visiting Professor, Faculty of Dentistry, University of Queensland, Brisbane, Australia
1992	Nevin Lecture. University of Colorado, Denver, Colorado

1992	Commencement Speaker, Eastman Dental Center, Rochester, New York
1993	Who's Who in America
1993	Fellow, Pierre Fauchard Academy
1993	Fellow of the American Association for the Advancement of Science

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS:

1964-76	Royal Society of Medicine, London (Associate)
1960-79	British Dental Association
1979-now	International Association for Dental Research
1979-now	American Association for Dental Research
1979-now	American Academy of Oral Pathology
1983-now	American Society of Microbiology
1983	American Society for Cancer Chemotherapy
1985-now	American Association of Women Dentists
1986-now	American Association for the Advancement of Science
1986-now	American Academy of Oral Medicine
1986-now	American Association of Dental Schools
1986-now	International Association of Oral Pathologists
1986-now	American Dental Association
1986-now	California Dental Association
1986-now	San Francisco Dental Society
1987-now	Royal Society of Medicine, London (Fellow)
1988-now	International AIDS Society
1992-now	American Public Health Association

SERVICE TO PROFESSIONAL ORGANIZATIONS:

1986-87	IADR/AADR, Experimental Pathology Group, Member at Large, Executive Committee
1986-89	AADR, Session Chairman
1987	IADR/AADR, Moderator, Symposium on Smokeless Tobacco, Chicago, Illinois
1987	American Medical Association, AIDS and Public Policy. Chicago, Illinois
1987	Testifying before a Joint Sub-committee of California Legislature on Health Effects of Tobacco representing California Dental Association, Sacramento, California
1988	IADR/AADR, Organizer and Moderator, Symposium on Papillomaviruses, Montreal, Canada

1988-89	IADR/AADR, Experimental Pathology Group. Program Chair
1988-91	AADR, Constitution Committee, Member. Chair 1990-91
1988-now	American Dental Association. Visiting Lecturer, Speaker's Bureau
1988	Testifying before the House Appropriations Committee, Sub-Committee on Labor, Health and Human Services and Education, representing the American Association of Dental Research, Washington, DC.
1988-now	American Dental Association, Consultant, Council on Dental Therapeutics
1989-90	VIth International Conference on AIDS 1990. Planning Committee Track 11, Clinical Sciences
1989	National AIDS Update 1989. Advisory Committee
1989	AIDS and Dental Education. Symposium participant. American Association of Dental Schools, San Francisco, California
1988-89	IADR/AADR, Experimental Pathology Group, President-Elect
1989-90	IADR/AADR, Experimental Pathology Group, President, Executive Committee
1989	Committee on Curriculum Guidelines for Infectious Diseases American Association of Dental Schools, Centers for Disease Control, HRSA, Washington, DC
1990	Testifying before the Human Resources Task Force, Committee on the Budget, House of Representatives; representing the American Association of Dental Schools, San Francisco, California
1989	AIDS and Dental Education. Symposium participant. American Association of Dental Schools, San Francisco, California
1990	Occupational Hazards in Dentistry: Risk, Perception and Response. Participant, Joint AADR/AADS Symposium, Cincinnati, Ohio
1990	Opportunities in Science, Careers in Dental Science. Participant, IADR/AADR Symposium, Cincinnati, Ohio
1990-1	AADR, San Francisco Section, President
1991- now	AADR, Treasurer
1991	IADR/AADR Oral Infections In The Immunocompromised Host. Co-Chair, Symposium, Acapulco, Mexico
1991	IADR/AADR, Dental Implications of AIDS. Science Transfer Seminar, Acapulco, Mexico

1991	Australia and New Zealand Division IADR. Impact of the AIDS Epidemic on the Dental Profession. Symposium participant, Brisbane, Australia
1991	Australia and New Zealand Division IADR. Session Chair, Brisbane, Australia
1992	AADR. Oral Opportunistic Infections in HIV disease. Science Transfer Seminar. Boston, Massachusetts
1992	Opportunities in Science Careers in Dental Science. Participant in AADR Outreach Symposium. Boston, Massachusetts
1992	International Congress on Oral Medicine, Session Chair. Edinburgh, Scotland
1992	Ad hoc reviewer: Grants and Allocation Committee, American Fund for Dental Health
1993	Testifying before the House Appropriations Committee, Sub-Committee on Labor, Health and Human Services and Education, representing the American Association of Dental Schools, Washington, DC.
1993	Opportunities in Science Careers in Dental Science. Participant in AADR Outreach Symposium. Chicago Illinois
1993	Oral Candidiasis: Clinical implications, pathogenesis and therapy. Co-Chair IADR/AADR Symposium, Chicago Illinois
1993	Testifying before the Institute of Medicine, Committee on the Future of Dental Education, Washington DC

SERVICE TO PROFESSIONAL PUBLICATIONS:

1983-88	Journal of Oral Pathology	Ad Hoc Referee
1985-now	Cancer	Ad Hoc Referee
1986-now	Journal of the Academy of General Dentistry	Ad Hoc Referee
1986	European Journal of Cancer & Clinical Oncology	Ad Hoc Referee
1988-now	Archives of Dermatology	Ad Hoc Referee
1988-now	Journal of the American Medical Association	Ad Hoc Referee
1991-now	AIDS	Ad Hoc Referee
1991-now	Journal of Acquired Immunodeficiency Syndrome	Ad Hoc Referee

1991-now	Journal of The American College of Dentists	Editorial Board of Review
1991-now	Journal of Dental Research	Ad Hoc Referee
1991-now	Journal of the American Dental Association	Ad Hoc Referee
1992	Community Dentistry and Oral Epidemiology	Ad Hoc Referee
1992-now	Journal of the California Dental Association	Ad Hoc Referee
1992	Journal of Oral Pathology and Medicine	Ad Hoc Referee
1993	Journal of Oral Pathology and Medicine	Editorial Board of Review
1993	Special Care in Dentistry	Ad Hoc Referee

SERVICE TO GOVERNMENT:

1987	Consultant for Review of Guidelines for Prevention of Transmission of HIV Infection in Health Care Workers (two meetings). Centers for Disease Control, Atlanta, Georgia
1987,88	Consultant; NIDR AIDS Task Force. NIDR, Washington, DC.
1987	Consultant; Task Force on AIDS and Dental Education. AADS, CDC and HRSA. Washington, DC.
1987-now	Ad Hoc reviewer for RO1 applications. Epidemiology and Disease Control Study Section, Division of Research Grants, N.I.H.
1988	Consultant; Multidisciplinary Curriculum Development Conference on HIV Infection. Workshop Leader: Provider Responsibility: Legal and Ethical Issues. Bureau of Maternal and Child Health and Resources Development. HRSA. Baltimore, Maryland
1988	Member of Objective Review Committee, AIDS Regional Education and Training Centers. Bureau of Maternal and Child Health and Resources Development. HRSA. Rockville, Maryland
1989	Speaker: NIH Consensus Development Conference. Oral complications of cancer therapies: Diagnosis, prevention and treatment
1989	Member: Ad hoc committee on smoking cessation in the dental office. National Cancer Institute, Rockville, Maryland
1989-now	Member: Programs Advisory Committee of the National Institute of Dental Research

1989	Participant: HIV/AIDS Surveillance and Epidemiology Briefing. WHO/GPA. Berkeley, California
1990	Consultant: NIDR HIV Oral Health Research Activity at The Walter Reed Army Medical Center, Washington, DC.
1990	Member: Special ad hoc Review Committee for Program Project application. NIDR
1991-1993	Member: National Panel for The Development of Clinical Practice Guidelines for HIV and AIDS. Agency for Health Care Policy and Research
1991-now	Member: Dental Products Panel, Center for Devices and Radiological Health, Food and Drug Administration.
1991	Member: Special ad hoc Technical Review Panel. NIDR.
1992	Ad hoc reviewer: Small Grants Review Committee. NIDR
1992	Ad hoc reviewer: Small Grants Application. Agency for Health Care Policy and Research
1993	Ad hoc reviewer: Small Grants Review Committee. NIDR

CONSULTANT:

1986	Consultant to the Working Party on AIDS, European Economic Community Bureau of Health, Copenhagen, Denmark
1987	AIDS Services Evaluation Project. Northwestern University Dental School, Chicago, Illinois
1988	AHEC. Train-the-Trainer program, UCSF
1989	Oral AIDS Project, Louisiana State University Medical Center
1989-now	Joint FDI/WHO working group on AIDS
1989	Reviewer: Medical Research Council, United Kingdom.
1990	Consultant: European Economic Community Clearinghouse on Oral Problems Related to HIV Infection and World Health Organization Collaborating Center on Oral Manifestations of HIV infection, Amsterdam, Holland
1991	Consultant: Panel on Guidelines for the Infected Health Care Worker; Dept. of Health, State of California, representing the California Dental Association
1991	Consultant: Prevention of HIV and Hepatitis B in The Health Care Setting World Health Organization, Geneva, Switzerland
1991	Consultant: AIDS Task Force, San Francisco Medical Society

1992	Consultant: European Economic Community Clearinghouse on Oral Problems Related to HIV Infection and World Health Organization Collaborating Center on Oral Manifestations of HIV Infection, London, England

SCIENTIFIC AND PROFESSIONAL MEETINGS AND WORKSHOPS ATTENDED:

International

European Symposium on Calcified Tissues, Davos, Switzerland, 1965
Second International Conference on Oral Biology, London, UK, 1965
European Immunology Congress, Amsterdam, Holland, 1974
Second International Congress of Immunology, Brighton, UK, 1974
Anglo-French Symposium, Cell Mediated Immunity in Human Disease, Paris, France, 1975
International Association for Dental Research, Copenhagen, Denmark, 1977; Sydney, Australia 1983; The Hague, The Netherlands, 1986; Dublin, Ireland, 1989; Glasgow, Scotland 1992;
International Congress, Mexican Dental Association, Mexico City, Mexico, 1979
International Association of Stomatology, London, UK, 1981
Eighth International Conference on Oral Biology, Sydney, Australia, 1983
International Association of Oral Pathologists, Amsterdam, The Netherlands, 1984
3rd International Workshop on Papillomaviruses, Kyoto, Japan, 1984
Scandinavian Society for Oral Medicine and Oral Pathology, Turku, Finland, 1985
4th International Workshop on Papillomaviruses, Kuopio, Finland, 1985
I International Conference on Acquired Immunodeficiency Syndrome, Atlanta, 1985
II International Conference on Acquired Immunodeficiency Syndrome, Paris, 1986
1st World Dental Conference, Israel, 1986
International Association of Oral Pathologists, Edinburgh, Scotland, 1986
5th International Workshop on Papillomaviruses, Cold Spring Harbor Laboratories, New York, 1986
III International Conference on Acquired Immunodeficiency Syndrome, Washington DC, 1987
6th International Workshop on Papillomaviruses, Washington, DC, 1987
3rd International Conference on Immunobiology and Prophylaxis of Herpesviruses. Florida, 1987
Wellcome International Antiviral Symposium. Monaco, France, 1987
International Workshop on Oral Manifestations of HIV Infection, San Diego, California, 1988
International Association of Oral Pathologists, Philadelphia, 1988
IV International Conference on Acquired Immunodeficiency Syndrome, Stockholm, Sweden, 1988
World Workshop on Oral Medicine, Chicago, 1988
2nd World Dental Conference, Israel, 1988
11th International Conference on Oral Biology, Hong Kong, 1988
International Conference, Epstein Barr Virus: The First 25 Years, Oxford, England, 1989
V International Conference on Acquired Immunodeficiency Syndrome, Montreal, Canada, 1989
VI International Conference on Acquired Immunodeficiency Syndrome, San Francisco, California, 1990
VII International Conference on Acquired Immunodeficiency Syndrome, Florence, Italy, 1991
1991 International Workshop on Papillomaviruses, Seattle, Washington
1991 Australia and New Zealand Division, IADR. Brisbane, Australia
International Congress on Oral Medicine, Edinburgh, Scotland, 1992
VIII International Conference on Acquired Immunodeficiency Syndrome, Amsterdam, Holland, 1992
5th International Symposium on Epstein-Barr Virus and Associated Diseases, Annecy, France, 1992
2nd International Workshop on Oral Manifestations of HIV Infection, San Francisco, California,1993
1X International Conference on Acquired Immunodeficiency Syndrome, Berlin, Germany, 1993

National

British Division, International Association for Dental Research, Annual Meetings, 1964-75
Regular Attendee, British Dental Association, Annual Meeting, 1964-76
American Dental Association, 1972, 1982, 1985, 1988, 1993
American Association for Dental Research, 1973, 1979, 1980, 1981, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993
American Radium Society, 1978
American Academy of Oral Pathology, 1974, 1977, 1978, 1979, 1982, 1984, 1986, 1988, 1992
American Academy of Dermatology, 1978, 1989, 1992
British Society for Immunology, 1979
American Society of Clinical Oncologists, 1983
American Association for Cancer Research, 1983
American Academy of Family Physicians, 1983
American Association of Dental Schools, 1985,1986,1987,1988,1989,1990, 1992, 1993
UCLA Molecular Biology Symposium - Papillomaviruses, 1985
American Academy of Oral Medicine, 1986, 1987, 1988, 1989, 1990,1991, 1993
Centers for Disease Control, 1991
Keystone Symposium Molecular Biology of Human Pathogenic Viruses, 1991
American Public Health Association, 1993

Regional

Regular attendee at meetings of Metropolitan Section of British Dental Association and of London Chapter of Alpha Omega, 1964-76
Western Society for Periodontology, 1973
Mid-Winter Immunology Meeting, Asilomar, California, 1977, 1978
Central Association of Physicians and Dentists, 1979, 1985
Pacific Skin Research Club, 1979
San Francisco Regional Cancer Foundation, 1980
Northern California Section, American Society for Microbiology, 1985 (invited speaker)
California Dental Association Scientific Session, 1986,1989 (invited speaker)
Universitywide Task Force on AIDS, 1986, 1987

INVITED PAPERS, LECTURES, PRESENTATIONS:

Dental Health Programs

1972-73	Richmond School District, Richmond, California
1973-76	Three preparatory schools, London, UK

Dental Societies

1972, 73 1976-79	Dentistry in the British National Health Service. A lecture to several dental societies in Northern California.

1982	Oral complications of radiation therapy. ADA, Las Vegas, Nevada.
1985	Oral manifestations of AIDS. American Association of Women Dentists, San Francisco, California
1985	New approaches to the pathogenesis of leukoplakia - The lesson of AIDS, and implications of AIDS for the dental practitioner. Southern California Academy of Oral Pathology, Los Angeles, California
1985	Clinical implications of AIDS virus infection and oral hairy leukoplakia. Friends of the University of Connecticut School of Dentistry, Hartford, Connecticut
1985	Oral manifestations of AIDS virus infection. New England Branch, Academy of General Dentistry, Boston, Massachusetts
1986	Pathology of oral features of AIDS. Medical-Dental Guild, San Francisco, California
1987	AIDS and the dental team. Redwood Empire Dental Society, Santa Rosa, California
1987	AIDS 1987. Lessons from California. Alpha Omega Dental Society, London, England.
1987	Oral cancer and pre-cancer. American Cancer Society and Sacramento Dental Society. Sacramento, California
1987	Oral lesions of HIV infection and their management. California Dental Hygienists Association. Sonoma, California
1987	AIDS and the dental team, current progress and infection control. Palm Springs Seminar, Palm Springs, California
1988	AIDS. Challenges and opportunities. San Francisco Dental Society. San Francisco, California
1988	Oral lesions of HIV infection. Diagnosis and management. Annenberg Lecture. Alpha Omega Dental Society. London, England.
1988	International Symposium on AIDS. ADA/FDI World Dental Congress. Washington DC.
1988	Oral implications of AIDS. Finnish Dental Society, Helsinki, Finland
1989	AIDS: The challenge for dentistry. Alameda Dental Society, Oakland, California
1989	Implications for dentistry of AIDS and HIV infection. Symposium participant. Yankee Dental Congress, Boston, Massachusetts
1989	AIDS and dentistry. Implications for Dental Practice. Symposium participant. Praktikertjanst AB. Medico-Dental Workshop, San Francisco, California

1989	AIDS 1989: What we must know and what we must do. Arizona State Dental Society, Phoenix, Arizona
1989	Management of the immunocompromised patient. San Mateo Dental Society, California
1989	Diagnosis and treatment of the immunocompromised patient. Indian Health Service PHS, Portland, Oregon
1989	AIDS : into the 1990's: California Dental Association, San Francisco, California
1989	Diagnosis and treatment of the immunocompromised patient. Bay Area Armed Forces Dental Study Group, Oakland, California
1990	Update on HIV infection. Alpha Omega Dental Society, San Francisco, California
1990	AIDS 1990. College of Dental Surgeons of British Columbia, Vancouver, British Columbia
1990	Update on HIV infection. Academy of General Dentistry, San Francisco, California
1990	Oral manifestations of AIDS. National Dental Association, Houston, Texas
1991	AIDS and Dentistry: The challenge continues. Ontario Dental Association, Toronto, Canada
1991	AIDS 1991: What you need to know. Marin County Dental Society, San Rafael, California
1991	AIDS and the mouth 1991. The 68th Annual Session of the American Dental Hygienists Association, Orlando, Florida
1991	Early detection of oral cancer and management of the complications of cancer therapy. Australia Dental Association, Brisbane, Australia
1991	AIDS and the mouth 1991. Chester and Delaware Dental Society. Havertown Pennsylvania
1993	AIDS: an update for 1993. Chinese American Dental Society of Southern California. Los Angeles, California
1993	Impact of TB and HIV infection on Dentistry for 1993. Alpha Omega Dental Society, San Francisco, California

Scientific Societies

1985	Oral implications of AIDS virus infection. Northern California Branch, American Society of Microbiology, Santa Cruz, California
1986	Oral manifestations of AIDS and implications for research. Lunch & Learning Program, American Association for Dental Research, Washington, DC.
1986	Oral implications of AIDS virus infection and infection control issues for the Dental Office. Life Foundation (AIDS Foundation of Hawaii), Honolulu, Hawaii
1986	Oral implications of AIDS. Symposium on Oral Health Research Implications of AIDS, International Association for Dental Research, The Hague, The Netherlands
1986	The challenge of AIDS. Oral lesions in association with HIV infection. World Dental Congress, Jerusalem, Israel.
1986	Clinical aspects of oral manifestations of AIDS. International Association of Oral Pathologists, Edinburgh, Scotland.
1988	Dental treatment for the HIV infected individual in the dental school environment. Symposium participant Organization of Teachers of Oral Diagnosis, American Association of Dental Schools, Montreal, Canada
1988	Investigation of oral white lesions. Clinicopathologic conference. American Academy of Oral Medicine, San Francisco, California
1988	Diagnosis and management of oral lesions associated with HIV infection. 2nd World Dental Conference, Jerusalem, Israel
1988	Perspectives on the current issues in diagnosis and therapeutics of oral and related infectious diseases. Symposium participant. Organization of The Teachers of Oral Diagnosis, Vail, Colorado
1989	The path to hairy leukoplakia. American Academy of Oral Medicine, Phoenix, Arizona
1989	Viral disease in HIV infection; symposium participant, AIDS and the Mouth. International Association for Dental Research, Dublin, Ireland
1989	Oral hairy leukoplakia; symposium participant, AIDS. American Academy of Dermatology, San Francisco, California
1990	Oral mucosal and GI disease. Symposium moderator and chair. VI International Conference on Acquired Immunodeficiency Syndrome, San Francisco, California
1991	HIV-related oral manifestations: Controversies on etiopathogenic and clinical aspects. VIIth International Conference on Acquired Immunodeficiency Syndrome, Florence, Italy

1991	Clinical aspects of virally induced oral lesions of HIV infection. 1st European Congress of Oral Medicine. Madrid, Spain
1992	Oral lesions and EBV infection. European Research Group for Oral Biology. Zurich, Switzerland.
1992	Oral manifestations of HIV Infection; symposium participant, AIDS. American Academy of Dermatology, San Francisco, California

UCSF

1977,78	Diagnosis of oral cancer, Table Clinic, Dental Alumni Association
1980	Early diagnosis of oral cancer, Opening of Dental School Building
1984	Common oral lesions, Primary Care Grand Rounds
1984	Oral 'hairy' leukoplakia, Kaposi's Sarcoma Clinic
1984	Oral 'hairy' leukoplakia, Infectious Disease Rounds
1984	Oral viral leukoplakia, Dean's Council, School of Dentistry
1985	Clinical expression of AIDS retrovirus in the mouth, Dermatology Rounds
1985	Epidemiology and pathogenesis of oral 'hairy' leukoplakia, AIDS Investigators Group
1986	Oral manifestations of AIDS virus infection and infection control in the dental office, Annual Dental Alumni Meeting
1986	Current research in oral lesions associated with HIV infection, Oral & Maxillofacial Surgery Grand Rounds
1986	Viral and bacterial infections, symposium participant. Continuing Education Program, School of Dentistry
1986	Current clinical consensus in dental hygiene, symposium participant. Continuing Education Program, School of Dentistry
1987-91	Oral manifestations of HIV infection. AIDS Providers Education Experience (APEX). San Francisco General Hospital
1987	Oral pathology of AIDS. Otolaryngology Academic Conference Group
1987,88	AIDS. Hepatitis and infection control. Annual Dental Alumni Meeting
1988	Investigation of oral lesions of HIV infection. Clinicopathological conference in; Advances and Controversies in Oral and Maxillofacial Surgery, Dept. of Oral and Maxillofacial Surgery

1988	AIDS, hepatitis and infection control. Postgraduate course, School of Dentistry.
1988	Common and not so common oral lesions. Postgraduate course, School of Medicine.
1988	Occupational HIV infection: Risks and risk reduction. Infection control issues for dental professionals. Postgraduate course, School of Medicine and Northern California Occupational Health Center.
1991	How HIV impacts on the practice of Medicine, Dentistry and Nursing. Mt. Zion Alumni Day
1992	AIDS/HIV update and infection control for the '90s. Continuing Education Program, School of Dentistry
1992	AIDS update. Center for Continuing Education, School of Dentistry. Phoenix, Arizona
1992	Advances in the diagnosis and management of oral cancer. Symposium Participant. Center for Continuing Education, School of Dentistry.
1993	Oral manifestations of HIV disease. Laboratory Medicine Grand Rounds, Department of Laboratory Medicine
1993	The mouth and Diabetes. Diabetes Clinic Grand Rounds.
1993	HIV update and OSHA compliance for the '90s. Continuing Education Program, School of Dentistry

Other Presentations

1980	Oral cancer and the smoking/alcohol issue Regional Cancer Foundation, San Francisco, California
1984	Leukoplakia in AIDS-related complex, Forsyth Dental Center, Boston, Massachusetts
1984-	Oral manifestations of AIDS, San Francisco Men's Health Care Project; Children's Hospital, San Francisco
1984	Oral manifestation of AIDS and oral viral leukoplakia, Middlesex Hospital Medical School, Dept. of Venereal Disease Medicine, England
1984	Oral manifestations of AIDS and oral viral leukoplakia, Aichi-Gakuin University, School of Dentistry, Nagoya, Japan
1984	Oral manifestations of AIDS and oral viral leukoplakia, Georgetown University School of Medicine, Dept. of Pathology, Washington DC

1984	Oral manifestations of AIDS and oral viral leukoplakia, University College Dental School, University of London, England
1985	Oral manifestations of AIDS retrovirus infection - implications for dental practice, Department of Oral Immunology & Microbiology, Guys Hospital, London, England
1985	Epidemiology of oral hairy leukoplakia and its relationship to AIDS, Department of Virology, Institute Pasteur, Paris, France
1985	Oral health implications of AIDS, Cancer Research Institute, Heidelberg, Germany
1985	Oral manifestations of AIDS retrovirus infection - implications for dental practice, Dental School, University of Glasgow, Scotland
1985	Oral manifestations of AIDS virus infection and oral hairy leukoplakia, Baltimore College of Dental Surgery, University of Maryland, Baltimore Maryland
1986	Implications of HIV infection for dentistry, London Hospital Dental Institute, University of London, England
1986	AIDS and the dental profession, new facts/new dilemmas. Baltimore College of Dental Surgery, University of Maryland
1986	Sexually transmitted diseases in the field of dentistry. American Correctional Health Services Association, San Francisco, California
1986	Oral manifestations of AIDS. Prevention, protection for the practitioner. Yale-New Haven Hospital, Dept. of Dentistry, Connecticut State Dental Association and American Cancer Society. Yale Univ. School of Medicine, New Haven, Connecticut
1986	Oral manifestations of AIDS and AIDS-associated diseases. School of Dentistry, University of Washington, Seattle, Washington
1987	Spectrum of oral disease in association with HIV infection (Medical Grand Rounds), Kaiser Permanente, San Francisco, California
1987	AIDS and other viral disease. Scripps Clinic, La Jolla, California
1987	Oral manifestations of HIV infection. Infection Grand Rounds, Stanford University School of Medicine, Stanford, California
1987,88	Spectrum of oral manifestations of HIV infection, AIDS & ARC Update, San Francisco, California
1987	Spectrum of oral disease in HIV infection. Transfusion Safety Study (sponsored by National Heart, Lung and Blood Institute), Sonoma, California
1987	Oral lesions of HIV infection. Department of Medicine, Grand Rounds. Travis Air Force Base, California

1987	AIDS. Course at Ohio State University School of Dentistry, Columbus, Ohio
1988	Oral lesions of HIV infection. 1st International Symposium on perspectives on oral manifestations of AIDS. Co-organizer, Panel Moderator and Speaker. San Diego, California
1988	AIDS in the dental office. UC Davis School of Medicine and Sacramento District Dental Society, Sacramento, California
1988	Managing HIV infected and AIDS patients in your practice. Symposium participant. New York University College of Dentistry, New York
1988	Management of the oral lesions seen in association with HIV infection (Medical Grand Rounds), Kaiser Permanente, San Francisco, California
1989	Spectrum of the oral disease seen in AIDS and HIV infection (Medical Grand Rounds), Kaiser Permanente, Oakland, California
1989	Oral manifestations of HIV and other infections. Faculty of Dentistry, University of British Columbia, Vancouver, Canada
1989	Oral manifestations of HIV infections. Symposium participant, 1st International Medical/ Dental Congress on AIDS. Temple University, Philadelphia
1989	Treatment concerns for people with HIV infection. Symposium participant. National AIDS Update, San Francisco, California
1990	Oral manifestations of HIV-infection, County Community Consortium- AIDS Clinical Grand Rounds. San Francisco, California
1990	Management of oral lesions associated with HIV infection, The Clinical Consortium, Palo Alto, California
1990	Hairy leukoplakia; symposium participant. VA Teleconference on AIDS San Francisco, California
1990	The mouth and AIDS. Cancer Research Center. University of Birmingham, England
1990	Diagnosis and treatment of the immunocompromised patient. School of Dentistry, Loma Linda University, California
1990	Primary Care AIDS update: New hope in a new era. Symposium participant. Alta Bates - Herrick Hospital, Berkeley, California
1990	AIDS 1990: University of Kentucky College of Dentistry, Lexington, Kentucky
1990	AIDS 1990: Rhode Island Department of Health and the Rhode Island Dental Association, Providence, Rhode Island

1990	Diagnosis and management of oral lesions of HIV infection. AIDS Rounds. Peninsula Hospital, Burlingame, California
1991	Management of oral lesions of HIV infection. Dental Professional Staff, Peninsula Hospital, Burlingame, California
1991	AIDS and Dentistry: What's on the horizon? University of Washington Continuing Dental Education, Seattle, Washington
1991	AIDS and the mouth: University of Medicine and Dentistry New Jersey, New Jersey
1991	Dental care and HIV infection. 4th National AIDS Update, San Francisco, California
1991	AIDS update for primary care: Early detection for early intervention. Symposium participant. Alta Bates - Herrick Hospital, Berkeley, California
1991	Oral research and dental treatment in HIV infection. UK Centre for the Study of the Oral Manifestations of HIV Infection. United Medical and Dental Schools of Guys Hospital and St. Thomas' Hospital, University of London, London, England
1991	Overview of the oral manifestations of HIV infection. Research Centers in Minority Institutions Second International AIDS Symposium, Morehouse School of Medicine, Atlanta, Georgia.
1991	AIDS and the Mouth 1991. School of Dentistry, Loma Linda University, California
1991	Oral hairy leukoplakia as a marker of HIV infection. Symposium participant. 3rd International Symposium on Oral AIDS. New York
1992	Oral lesions of HIV infection. Department of Corrections, Infectious Disease Control Conference. Sacramento, California
1992	Leadership in AIDS care and research: Mountain States Regional AIDS Education and Training Center. Denver, Colorado
1992	AIDS and Dentistry. An Update. School of Dentistry, University of Colorado, Denver, Colorado
1992	AIDS and the Dental Team. Chinese Dental Association. Taipei, Taiwan
1992	HIV infection and Dentistry. Kaohsiung Medical College School of Dentistry Kaohsiung, Taiwan
1992	The Paths of Excellence. Eastman Dental Center, Rochester, New York
1992	Intergrating HIV/AIDS: a shared responsibility: Dental care. 5th National AIDS Update, San Francisco, California
1993	Infectious diseases in the Dentistry. 2nd World Japanese Dental Association, Yokohama, Japan

1993	Pediatric HIV infection and AIDS in Northern California. 4th Annual Update. Stanford University School of Medicine, California
1993	Management of the oral lesions of HIV infection. 6th National AIDS Update, San Francisco, California
1993	Therapy of oral candidiasis. International Summit on Cutaneous Antifungal therapy. San Francisco, California
1993	Oral lesions and systemic disease. Student Health Service, San Francisco State University, California
1993	Oral lesions and HIV infection. Grand Rounds, Division of Infectious Diseases and Geographic Medicine. Stanford University School of Medicine, California

POSTGRADUATE AND CONTINUING EDUCATION COURSES ATTENDED:

1966	University College, London	Intravenous Anesthesia
1969	Royal Dental Hospital, London	Outpatient Oral Surgery
1970	Study Circle, London	Ceramic Bridgework
1971	University College, London	Intermittent Analgesia
1973	Royal Dental Hospital, London	Minor Oral Surgery
1974	Eastman Dental Hospital, London	Advances in Dental Materials
1976-now	UCSF, Grand Rounds, Department of Medicine.	Regular Attendee
1977	A.A.O.P., Portland, Oregon	Diagnostic Problems
1978	A.A.O.P., Ft. Lauderdale, Florida	Tumors of Neural Crest
1978	UCSF	Oral Histopathology Slide Seminar
1979	A.A.O.P., San Diego,California	Bone Tumors
1979	UCSF	Oral Histopathology Slide Seminar
1980	UCSF	Oral Histopathology Slide Seminar
1981	UCSF	Oral Histopathology Slide Seminar
1984	A.A.O.P., Boston, Massachusetts	Helen McClain Slide Seminar Immunohistologic Approach to Diseases of Oral Mucosa
1984	I.A.O.P., Amsterdam	Symposium on Fundamental Research in Oral Cancer and Precancer
1984	I.A.O.P., Amsterdam	Slide Seminar: Odontogenic Cysts and Tumors
1984	A.D.A., Chicago, Illinois	AADR Spokesperson Training Seminar
1986	I.A.O.P., Edinburgh, Scotland	Symposium on Tumor Markers
1988	I.A.O.P., Philadelphia, Pennsylvania	Symposium on Immunology and Oral Pathology

UNIVERSITY SERVICE:

Campus-Wide

1979-85	Board of Directors, Faculty Club (Vice-Chair, 1979; Chair, 1980-82).
1985-89	Academic Senate: Clinical Faculty Review Committee (standing subcommittee of Committee on Academic Personnel), Vice-Chair 1987-88, Chair 1988-89
1986	Academic Senate: Committee on Academic Personnel Ad Hoc Review Committee for a regular rank Associate Professor promotion.
1987	Academic Senate: Committee on Academic Personnel Ad Hoc Review Committee for a clinical rank Assistant Professor promotion.
1988	Academic Senate: Committee on Academic Personnel Ad Hoc Review Committee for a clinical rank Associate Clinical Professor promotion.
1988	Academic Senate: Committee on Academic Personnel Ad Hoc Review Committee for a clinical rank Associate Clinical Professor promotion.
1989	Academic Senate: Committee on Academic Personnel Ad Hoc Review Committee for a clinical rank Associate Clinical Professor appointment.
1989	Academic Senate: Committee on Academic Personnel Ad Hoc Review Committee for a clinical rank Associate Clinical Professor appraisal.
1989	Academic Senate: Committee on Academic Personnel Ad Hoc Review Committee for a Professor promotion
1991	Academic Senate: Committee on Academic Personnel Ad Hoc Review Committee for a Professor promotion
1991	Academic Senate: Committee on Academic Personnel Ad Hoc Review Committee for a Assistant Clinical Professor appointment
1991-1992	Review Committee of Appointments and Advancements to Academic Administrator Series and Academic Coordinator Series
1993	Executive Committee, AIDS Clinical Research Center

School of Dentistry

1978-79	Faculty Advisor to Dental Students' Wives
1982-83	Beautification Committee
1985-now	Admissions Committee

1986-87	Pew Dental Education Planning Project - Ad Hoc Committee
1987-89	Task Force on Infection Control - Chair
1987-90	Dean's Advisory Committee on Infection Control
1988-90	Ad Hoc Committee on Infection Control and Educational Policy
1989-now	Ad Hoc Committee on Infection Control Compliance, Chair
1989-now	Clinical Sciences Coordinating Committee
1989	Search Committee for Director of the AEGD program
1989-91	Selection Committee for residents for the AEGD program
1990	Search Committee for Chair, Department of Restorative Dentistry
1991-now	Dean's Advisory Committee on Health and Safety
1991	Search Committee for Associate Professor, Department of Oral and Maxillofacial Surgery
1991-2	Search Committee for Assistant Professor, Department of Growth and Development
1992-3	Search Committee for Chair of Pediatric Dentistry, Department of Growth and Development, Chair
1993	Subcommittee for Instruction in Medicine and Physical Diagnosis
1993	Faculty Development Advisory Committee

Department of Stomatology

1983	Program Development Committee
1988	Search Committee for Assistant Clinical Professor in Periodontology, Chair
1988	Ad Hoc Committee on Clinic Management
1988-90	Committee on Faculty Practice Organization
1988-91	Stomatology Clinical Center Management Group
1989-90	Search Committee for Assistant/Associate Professor in Oral Pathology
1989-now	Safety Committee

1992-93	Search Committee for Associate Professor/Professor in Molecular Pathogenesis

PUBLIC SERVICE:

1976-77	Secretary, Early Childhood Education Committee, Bel Aire School, Tiburon, California
1978	Fund Raising Groups, Scholarship Fund, Marin Country Day School, Corte Madera, California
1978	Program Committee, Congregation Sherith Israel, San Francisco, California
1982-1990	American Cancer Society, Dental Subcommittee of the Professional Education Committee, California Division
1983-84	Vice-President, Reedlands Home-owners Association, Tiburon, California
1984-86	Chair, Friends of Science Committee. Member Parents Association Advisory Board. San Francisco University High School
1984-now	Numerous radio, television and press interviews concerning AIDS, oral lesions and infection control in dentistry
1985-86	Member, Annual Fund Committee, San Francisco University High School
1986-91	Member, University Associates, San Francisco University High School
1991	American Cancer Society, California Division, Professional Health Care Providers Task Force

TEACHING: (since last review)

Formal Scheduled Classes for UCSF Students

Quarter	Acad. Yr.	Course No. and Title	Nature of Contribution
W	1988-	Oral Pathology 127	2 lectures Seminar leader (8-10 seminars)
Sp	1986-90	Oral Biology 128 C	Seminars
Sp	1988-89	Oral Medicine 120	2 lectures and 2 laboratory
W, Sp	1988-	Dental Hygiene 169 A,B&C (Clinical Oral Medicine)	Chairside teaching, 3 hrs/wk
F,W,Sp	1988-	Oral Medicine 139	Chairside teaching, 3 hrs/wk
F,W,Sp,S	1988-	Oral Medicine Clinic	Chairside teaching & clinical conferences with residents 1 4th-year dental student 4 hrs/wk 2 Summer session students

F,W,Sp	1988-9	General Practice Residents, Oral Medicine	Clinical instructor, 6 hrs/wk
W,Sp,S	1988-	Oral Medicine 189	Clinical research, 1 student, 3 hrs/wk
F,W,Sp	1986-	Oral Surgery CPC	Several contributions
F,W,Sp,S	1988-9	Oral Biology 250	Research project, 1 student, 3 hrs/wk
F,W,Sp,S	1988-	Advanced Education, General Dentistry	Chairside teaching, 12 hrs/wk; Seminars
F	1988-	Primary Care Rounds	Seminar, medical residents
Sp	1986-8	Restorative Dentistry 120 C: Gerodontology	Lecture
Sp	1988-90	Oral Biology 208 C	Seminar, 2 hrs
F/Sp	1988-	Family & Community Medicine 110	Lecture
F	1988	Research Methods & Design in the Behavioral Sciences DPH 189	Seminar, 1 hr
W	1988	Introduction to Clinical Dentistry RD 116B	Lecture
W	1988-9	Microbiology 126B	Lecture
Sp	1988-	Oral Medicine 122	Course Chair. Lecture and Laboratory
W	1990-	Microbiology 116	Lecture
F,W,Sp	1988-	Oral Medicine 489	Clinical research, 1-2 students
Sp	1992	Oral and Maxillofacial Surgery 200	Lecture
Sp	1993	DPHH 130	Lecture

Postdoctoral Fellows Supervised

1981-82	M. Gorsky, DMD
1982-84	L. Luangjarmekorn, DDS
1983-84	C. Migliorati, DDS
1987	L. Walton, DDS
1987-now	S. Miyasaki DDS
1988-90	L. MacPhail PhD, DDS
1988-90	C. Dodd BDS
1988-90	JP. Rabanus DMD
1990-now	G. Heinic DMD
1992-93	C. Beck DMD
1992-93	U. Ekoku DDS

Summary of Teaching 1988-93 Total Student Contact Hours approx. 900 hrs/year

RESEARCH AND CREATIVE ACTIVITY:

Societies (Abstracts) *Papers Presented in Person

1978 *Greenspan D and Silverman, S Jr.
Bland dentifrice and mucositis
International Association for Dental Research/American Association for Dental Research, Washington, DC.

1979 *Greenspan D and Daniels TE.
The use of pilocarpine in post-radiation xerostomia
International Association for Dental Research/American Association for Dental Research, New Orleans, Louisiana

1979 *Greenspan D, Greenspan JS, Jacobsen P, Cullen B, Silverman S Jr
Immunological studies in head and neck cancer
American Academy of Oral Pathology, San Diego, California

1980 *Greenspan D, Silverman S, Shillitoe EJ.
Prospective study of oral cancer and herpes simplex virus antibodies
American Association for Dental Research, Los Angeles, California

1981 Shillitoe EJ, Greenspan D, Greenspan JS, Silverman S.
Immunoglobulin class of antibody to herpes simplex virus in patients with oral cancer. American Association for Dental Research, Chicago, Illinois

1981 Greenspan JS, Olson JA, Greenspan D, Shillitoe EJ, Daniels TE, Gadol N, Hoover C, Jacobsen PL.
Immunopathogenesis of recurrent aphthous ulcers
International Association of Stomatology, London, UK

1982 Shillitoe EJ, Greenspan D, Greenspan JS, Silverman S, Jr
Survival of patients with oral cancer and its relationship to antibody to herpes simplex virus
International Association for Dental Research/American Association for Dental Research, New Orleans

1982 *Greenspan D, Silverman S Jr, Greenspan JS.
Efficacy of clotrimazole troches on localized oral candidiasis
American Academy of Oral Pathology, Reno, Nevada

1982 Greenspan JS, Greenspan D, Daniels TE.
Mononuclear cell populations in the lesions of oral lichen planus identified with monoclonal antibodies
American Academy of Oral Pathology, Reno, Nevada

1982 Shillitoe EJ, Greenspan JS, Greenspan D, Silverman S Jr
Serum antibody to early and late antigens of herpes simplex virus in patients with oral cancer
American Academy of Oral Pathology, Reno, Nevada

1982	Shillitoe EJ, Greenspan D, Greenspan JS, Silverman S Jr. Prognostic significance of antibody to herpes simplex virus in oral cancer 13th International Cancer Congress, Seattle, Washington
1982	Shillitoe EJ, Greenspan JS, Greenspan D, Silverman S Jr. Antibody to early and late antigens of herpes simplex virus in oral cancer British Society for Oral Pathology, Leeds, UK
1983	*Greenspan D Treatment of oropharyngeal candidiasis: Evaluation of a clotrimazole troche American Society of Clinical Oncology, San Diego, California
1983	Migliorati CA, Greenspan D, Silverman S Jr, Greenspan JS. Mononuclear cell characterization in premalignant oral lesions American Association for Dental Research, Cincinnati, Ohio
1983	Migliorati CA, Meyer JR, Greenspan D, Daniels TE, Silverman S Jr, Greenspan JS. Changes in basement components in pemphigoid and lichen planus American Association for Dental Research, Cincinnati, Ohio
1983	Silverman S Jr, Greenspan D Tobacco usage and the risk for multiple head and neck carcinomas American Association for Dental Research, Cincinnati, Ohio
1983	*Greenspan D, Silverman S Jr. Double-blind comparison of ketoconazole and placebo in the treatment of oral candidiasis International Association for Dental Research, Sydney, Australia
1983	*Greenspan D Oral mucosal disease in the immunocompromised patient. Workshop: Eighth International Congress of Oral Biology, Sydney, Australia
1984	Shillitoe EJ, Greenspan D, Greenspan JS, Silverman S Jr . A five year survival study of oral cancer American Association for Dental Research, Dallas, Texas
1984	Migliorati CA, Silverman S Jr, Greenspan D, Greenspan JS. Phenotypes of mononuclear cells in oral precancer and cancer American Association for Dental Research, Dallas, Texas
1984	Shillitoe EJ, Greenspan D, Greenspan JS, Silverman S Jr. Antibody to herpes simplex virus type-I and survival of patients with oral cancer. UCLA Symposium on Herpes Viruses, Colorado.
1984	*Greenspan D, Silverman S Jr, Greenspan JS. Oral leukoplakia in ARC (AIDS related complex) American Academy of Oral Pathology, Boston Massachusetts

1984	*Greenspan D, Silverman S Jr, Greenspan JS.: Oral leukoplakia in ARC (AIDS related complex) International Association of Oral Pathology, Amsterdam, Netherlands
1984	*Greenspan D, Greenspan JS, Conant M, Petersen V, Silverman S Jr, DeSouza Y. Oral viral leukoplakia in association with AIDS 3rd International Workshop on Papillomaviruses, Kyoto, Japan
1985	*Greenspan D, Greenspan JS, Kaminsky LS, Levy JA, Silverman S Jr, DeSouza, Y. Oral viral leukoplakia in association with AIDS and the AIDS-related complex. American Association for Dental Research, Las Vegas
1985	*Greenspan D, Greenspan J.S, Lennette ET, Petersen V, DeSouza Y. Oral 'Hairy' Leukoplakia: Evidence of both papillomavirus and Epstein-Barr Virus UCLA Molecular Biology Symposium on Papillomavirus, Steamboat Springs, Colorado
1985	*Greenspan D, Greenspan JS, Kaminsky LS, Levy JA, DeSouza Y. Oral Viral Leukoplakia in Association with AIDS 1st International Conference on Acquired Immunodeficiency Syndrome, Atlanta, Georgia
1985	*Greenspan. D, Greenspan JS, Lennette ET, Freese UK. Papillomavirus and Epstein-Barr virus coexist within the epithelial cells of oral 'hairy' leukoplakia 4th International Workshop on Papillomaviruses, Kuopio, Finland
1986	Petersen V, Greenspan D, Greenspan JS. Ultrastructural study of virus particles in oral hairy leukoplakia American Association for Dental Research, Washington, DC.
1986	*Greenspan D, Conant MA, Abrams DI, Hollander H, Daniels TE, Greenspan JS. Oral hairy leukoplakia: The development of AIDS American Association for Dental Research, Washington, DC.
1986	Greenspan JS, Greenspan D, Freese UK. The whole Epstein-Barr virus genome is present in oral hairy leukoplakia American Association for Dental Research, Washington, DC
1986	Greenspan D*, de Villiers EM, Greenspan JS, zur Hausen H, Orth G, Croissant, O. New and unexpected papillomavirus types in oral warts American Academy of Oral Pathology, Toronto, Canada
1986	Greenspan JS, Greenspan D. Oral hairy leukoplakia: A new AIDS-associated lesion American Academy of Oral Pathology, Toronto, Canada

1986	*Greenspan D, Greenspan JS, Hearst NG, Hollander H, Abrams DI. Levy JA. Oral hairy leukoplakia as a predictor of AIDS II International Conference on Acquired Immunodeficiency Syndrome (AIDS), Paris
1986	Greenspan JS, Greenspan D, Lennette E, Conant MA, DeSouza Y, Freese UK. Unique expression of Epstein-Barr virus in AIDS-associated oral hairy leukoplakia II International Conference on Acquired Immunodeficiency Syndrome (AIDS), Paris
1986	Daniels TE, Greenspan D, Greenspan JS, Lennette E, Petersen V. Absence of Langerhans' cells correlates with presence of viral antigens in oral hairy leukoplakia, an AIDS-associated lesion II International Conference on Acquired Immunodeficiency Syndrome (AIDS), Paris
1986	Winkler JR, Murray PA, Greenspan D, Greenspan JS. Periodontal disease of male homosexuals as related to AIDS virus infection. International Conference on Acquired Immunodeficiency Syndrome (AIDS), Paris
1986	Winkler JR, Murray PA, Greenspan D , Greenspan JS. AIDS virus-associated periodontal disease International Association for Dental Research, The Hague, The Netherlands
1986	Daniels TE, Greenspan D, Greenspan JS, Lennette ET, Petersen V, DeSouza YG. Langerhans' cell absence correlates with viral antigen presence in hairy leukoplakia International Association for Dental Research, The Hague, The Netherlands
1986	DeSouza YG, Greenspan D, Hammer M, Hartzog GA, Felton JR, Greenspan JS. Demonstration of Epstein-Barr Virus DNA in the Epithelial Cells of Oral Hairy Leukoplakia International Association for Dental Research, The Hague, The Netherlands
1986	Abdel-Salem M, Greenspan D, Mayall BH, Greenspan JS. Nuclear DNA and chromatin distribution analysis of oral koilocytes using image analyzer International Association for Dental Research, The Hague, The Netherlands
1987	Murray PA, Hoover CH, Greenspan D, Greenspan JS, Winkler JR: Microbiologic evaluation of AIDS virus associated periodontitis American Association for Dental Research, Chicago, Illinois
1987	Winkler JR, Murray PA, Greenspan D, Greenspan JS. Periodontal disease of male homosexuals as related to AIDS virus infection. American Association for Dental Research, Chicago, Illinois
1987	Greenspan JS, Greenspan D, DeSouza Y, Freese UK. Diagnosis and investigation of hairy leukoplakia using non-invasive techniques. American Association for Dental Research, Chicago, Illinois

1987	*Greenspan D, Greenspan JS, DeSouza Y, Chapman SK, Lennette ET, Petersen V Efficacy of BW A515U in treatment of EBV infection in hairy leukoplakia. III International Conference on Acquired Immunodeficiency Syndrome, Washington, DC.
1987	Greenspan JS, Greenspan D, Lennette TE, DeSouza Y, Petersen V, Chapman SK, Freese UK. Hairy leukoplakia; pathogenesis, diagnosis and therapy of an epithelial EBV infection III International Conference on Immunobiology and Prophylaxis of Human Herpesviruses, Orlando, Florida.
1987	Gerberding JL, Nelson K, Greenspan D. Greenspan JS, Greene JC, Sande MA. Risk to dental professionals from occupational exposure to human immunodeficiency virus: Twenty-seventh Interscience Conference on Antimicrobial Agents and Chemotherapy. New York
1988	Feigal DW, Overby GL, Greenspan D, Leggott P, Greenspan JS, and UCSF Oral AIDS Epidemiology Group. Relative Prevalence of Oral HIV-associated abnormalities in referral clinic and community cohorts American Association for Dental Research, Montreal, Canada.
1988	Petersen V, Greenspan D, DeSouza YG, Greenspan JS. Ultrastructural study of EBV in oral hairy leukoplakia using post-embedding immunogold labeling American Association of Dental Research. Montreal, Canada.
1988	Greenspan JS, Silverman S Jr, Greenspan D. HIV infection and oral cancer. IV International Conference on Acquired Immunodeficiency Syndrome, Stockholm, Sweden
1988	Greenspan JS, Ziegler JL, Conant MA, Volberding PA, Wofsy C, Hollander H, Abrams DI, Moss AR, Greenspan D, Feigal DW, Gerberding JL. The UCSF AIDS specimen bank. IV International Conference on Acquired Immunodeficiency Syndrome, Stockholm, Sweden
1988	Feigal DW, Overby GL, Greenspan D, Greenspan JS, UCSF Oral AIDS Epidemiology Group. Early oral lesions found in community cohorts: Is hairy leukoplakia more common than candidiasis? IV International Conference on Acquired Immunodeficiency Syndrome, Stockholm. Sweden
1988	Greenspan JS, Petersen V, DeSouza YG, Greenspan D. EBV in oral hairy leukoplakia, an electron microscopic immunocytochemical study IV International Conference on Acquired Immunodeficiency Syndrome, Stockholm, Sweden

1988	MacPhail LM, Greenspan D, Merrell M, Greenspan JS. HSV types in oral and pharyngeal ulcers in association with HIV infection IV International Conference on Acquired Immunodeficiency Syndrome, Stockholm, Sweden
1988	Engelman J, Greenspan D, Lifson AR, Feigal DW, Hessol NA, Maus R, Rutherford GW, Greenspan JS. Oral manifestations of HIV infection in a cohort of homosexual and bisexual men IV International Conference on Acquired Immunodeficiency Syndrome, Stockholm, Sweden
1988	*Greenspan D, de Villiers EM, zur Hausen H, Pogrel MA, Greenspan JS. Human papillomavirus types in oral warts in association with HIV Infection IV International Conference on Acquired Immunodeficiency Syndrome, Stockholm, Sweden
1988	*Greenspan D, Greenspan JS, Abrams DI, Hollander H, MacPhail LM, Overby GL. Hairy leukoplakia and AIDS IV International Conference on Acquired Immunodeficiency Syndrome, Stockholm, Sweden
1988	Schiødt M, Greenspan D, Daniels TE, Leggott PJ, Greenspan JS. Parotid gland enlargement associated with labial sialadenitis in HIV-Infected patients IV International Conference on Acquired Immunodeficiency Syndrome, Stockholm, Sweden
1988	Mastrucci MT, Scott GB, Leggott PJ, Greenspan D, Greenspan JS. Oral manifestations of HIV infection in children IV International Conference on Acquired Immunodeficiency Syndrome, Stockholm, Sweden
1988	Gerbert B, Maguire B, Badner V, Greenspan D, Greenspan JS, Barnes D, Carlton R. Perceived personal risk: Impact on dentists' infection control behaviors IV International Conference on Acquired Immunodeficiency Syndrome, Stockholm, Sweden
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71 Katz MH, Greenspan D, Heinic GH, Chan AK, Hollander H, Chernoff D, Greenspan J.S.: Resolution of hairy leukoplakia: An observational trial of Zidovudine versus no treatment. J. Infect. Dis 1991; 164:1240-1

72. Dodd CL, Greenspan D, Katz MH, Westenhouse JL, Feigal DW, Greenspan JS. Oral candidiasis in HIV infection: pseudomembranous and erythematous candidiasis show similar rates of progression to AIDS. AIDS 1991; 5:1339-1343

73. Niedobitek G, Young LS, Lau R, Brooks L, Greenspan D, Greenspan JS, Rickinson AB: Epstein-Barr virus gene expression in oral hairy leukoplakia: virus replication in the absence of a detectable latent phase. J Gen Virol 1991 72:3035-3046

74. Greenspan D and Greenspan JS: The significance of hairy leukoplakia. Oral Surg Oral Med Oral Pathol 1992;73: 151-4

75. Katz MH, Greenspan D, Westenhouse J, Hessol NA, Buchbinder SP, Lifson AR, Shiboski S, Moss A, Samuel M, Winklestein W, Feigal DW, Greenspan JS; Progression to AIDS in HIV-infected homosexual and bisexual men with oral candidiasis and hairy leukoplakia: results from three San Francisco epidemiological cohorts. AIDS 1992;6:95-100

76. Atkinson JC, Schiødt M, Greenspan D, Fox PC, Greenspan JS, Dodd CL, Daniels TE Sialochemistry in HIV-associated salivary gland disease. J Rheumatol. 1992; 19:26-29

77. MacPhail LA, Greenspan D, and Greenspan JS.: Recurrent aphthous ulcers in association with HIV infection: Oral Surg Oral Med Oral Pathol 1992; 73:283-8

78. Heinic GS, Greenspan D, MacPhail LA, Schiødt M, Miyasaki S, Kaufman L, and Greenspan JS. Oral histoplasma capsulatum infection in association with HIV infection: a case report. J Oral Pathol Med. 1992; 21:85-89

79. Dodd CA, Greenspan D, Schiødt M, Daniels TE, Beckstead JH, MacPhail LA, Miyasaki S, and Greenspan JS: Unusual oral presentation of non-Hodgkin's lymphoma in association with HIV infection. Oral Surg Oral Med Oral Pathol 1992;73: 603--8

80. Heinic GS, Greenspan D, MacPhail, LA, and Greenspan, JS: Oral geotrichum candidum infection in association with HIV infection: a case report. Oral Surg Oral Med Oral Pathol 1992: 73:726-728

81. Masouredis CM, Katz MH, Greenspan D, Herrera C, Hollander H, Greenspan JS, Winkler JR: Prevalence of HIV-associated periodontitis and gingivitis in HIV-infected patients attending an AIDS clinic. J. Acquir. Immun. Def. Syn. 1992; 5:479-48379.

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83. Miyasaki SH, Hicks J, Greenspan D, Polacheck I, MacPhail LM., White TC, Agabian N, Greenspan JS: The identification and tracking of Candida albicans isolates from oral lesions in HIV-seropositive individuals. J Acquir Immun Def Syn 1992 5:1039-1046

84. Schiødt M, Dodd CL, Greenspan D, Daniels TE, Chernoff D, Hollander H, Wara D, Greenspan JS: Natural history of HIV-associated salivary gland disease. Oral Surg Oral Med Oral Pathol 1992: 74:326-331

85. Dodd CL, Greenspan D, Westenhouse JL, Katz MH: Xerostomia associated with 2',3'-dideoxyinosine (ddI) therapy. Lancet 740:790 (Letter to the Editor) 1992

86. Katz MH, Greenspan D, Greenspan JS: Epidemiologic models, clinical decision making, and the role of oral lesions. AIDS 1993: 7; 285-6

87. Heinic GS, Greenspan D, Greenspan JS : Oral CMV lesions and the HIV infected: Early recognition can help prevent morbidity. J Am Dent Assoc 1993:124; 99-105.

88. Dodd CL, Winkler JR, Heinic GS, Daniels TE, Yee K, Greenspan D: Cytomegalovirus infection presenting as acute periodontal infection in a patient infected with the human immunodeficiency virus. J Clin Periodontol 1993; 20:282-285

89. Heinic GS, Northfelt DW, Greenspan JS, MacPhail, Greenspan D,: Concurrent oral cytomegalovirus and herpes simplex virus infection in association with HIV infection Oral Surg Oral Med Oral Pathol 1993; 75:488-94

90. Regezi JA, MacPhail LA, Daniels TE, DeSouza YG, Greenspan JS, Greenspan D: Human immunodeficiency virus-associated oral Kaposi's sarcoma. A heterogeneous cell population dominated by spindle-shaped endothelial cells. Am J Pathol 1993; 143: 240-249

91. Atkinson JC, Schiødt M, Robataille S, Greenspan D, Greenspan JS, Fox PC: Salivary autoantibodies in HIV-associated salivary gland disease. J Oral Pathol Med 1993; 22: 203-206

92. Shiboski CH, Greenspan D, Dodd CL, Daniels TE. Oral T-cell lymphoma associated with celiac sprue. Oral Surg Oral Med Oral Pathol 1993; 76:54-58

In Press:

1. Dodd CL, Greenspan D, Heinic GS, Rabanus JP, Greenspan JS. Multifocal oral non-Hodgkin's lymphoma in an AIDS patient. B Dent Jour, 1993

2. Lifson AR, Hilton JF, Westenhouse JL, Canchola AJ, Samuel MC, Katz MH, Buchbinder SP, Hessol NA, Osmond DH, Shiboski S, Lang W, Greenspan D, Greenspan JS. Time from seroconversion to oral candidiasis or hairy leukoplakia among homosexual and bisexual men enrolled in three prospective cohorts. AIDS

3. Swoboda RK, Bertram G, Hollander D, Greenspan D, Greenspan JS, Gow NAR, Gooday GW, Brown AJP. Glycolytic enzymes of *Candida Albicans* are non-ubiquitous immunogens during candidiasis. Inf and Immun

Books and Chapters:

1. Greenspan D, Greenspan JS, Pindborg JJ, and Schiødt M.: AIDS and the Dental Team. Munksgaard, Copenhagen, 1986. (Translated into German, French, Italian, Spanish, and Japanese).

2. Greenspan D: Oral manifestations of HIV infection. In: San Francisco General Hospital AIDS Knowledge Base. Cohen PT, Sande MA, Volberding P et al, Eds. Latham, New York, BRS Colleague, 1986.

3. Greenspan D and Greenspan JS.: Oral mucosal manifestations of AIDS. In: Disorders of Mucous Membranes, R Rogers III, Ed., Dermatologic Clinics, 5(4): 733-737, Saunders 1987.

4. Greenspan JS, Greenspan D, and Winkler JR.: Diagnosis and management of the oral manifestations of HIV infection and AIDS. Sande MA, Volberding PA, Eds. Infectious Disease Clinics of North America 2 (2) 373-385, WB Saunders, 1988

5. Greenspan D and Greenspan JS.: The oral clinical features of HIV infection. Friedman S, Ed. Gastroenterology Clinics of North America, 17 (3) 535-543, WB Saunders, 1988

6. Greenspan JS and Greenspan D.: Oral mucosal manifestations of AIDS. In: AIDS: Pathogenesis and Treatment, Jay A Levy, Ed. Marcel Dekker, 1988

7. Greenspan D.: Oral manifestations of HIV infection. Oral Manifestations of AIDS. Robertson PB and Greenspan JS, Eds. 38-48. PSG Publishing Co., Inc., 1988

8. Greenspan D. : Infection control issues for the dental professional. In: Occupational medicine: State of the Art Reviews. Hanley and Belfus 4 (3) 71-75, 1989

9. Greenspan JS, Greenspan D, Winkler JR and Murray PA: Oral and periodontal changes in HIV infection. In: Contemporary Periodontics, RJ Genco et al. Eds. CV Mosby, Philadelphia, PA. 1989

10. Greenspan D and Greenspan JS: Manifestations of AIDS in the oral cavity. In: Opportunistic Infections in the AIDS Patients, Leoung GS., Mills J, Eds: 143-152. Marcel Dekker 1989

11. Greenspan D and Greenspan JS.: Oral lesions of HIV infection: Features and therapy. In: AIDS Clinical Review. Volberding P and Jacobson M, Eds. 81-93. Marcel Dekker 1990

12. Porter SR, Scully C, and Greenspan D: Primary and Secondary immunodeficiencies. In: Oral Manifestations of Systemic Disease, Jones H, and Mason D. Eds. 112-182. Harcourt Brace Jovanovich. 1990

13. Greenspan D, Greenspan J.S, Schiødt M, and Pindborg JJ.: AIDS and the Mouth. Munksgaard, Copenhagen, 1990.

14. Greenspan D: Viral infections in immunosuppressed patients. Perspectives on diagnosis and therapeutics of oral soft tissue infections. Cottone JA, Guest GF, Littlefield JH, Eds. 37-41. Dept. of Dental Diagnostic Science, University of Texas, San Antonio, 1991

14. Greenspan D: Viral infections in immunosuppressed patients. Perspectives on diagnosis and therapeutics of oral soft tissue infections. Cottone JA, Guest GF, Littlefield JH, Eds. 37-41. Dept. of Dental Diagnostic Science, University of Texas, San Antonio, 1991

15 Greenspan D and Greenspan JS: Oral mucosal manifestations of AIDS. In: Dermatologic Clinics on AIDS: A ten year perspective. WD James Ed. Dermatologic Clinics 9: 3; 517-522, 1991

16. Greenspan D and Greenspan JS: Oral lesions of HIV infection: Features and therapy. In: AIDS Clinical Review. Volberding P and Jacobson M, Eds. 225-39. Marcel Dekker 1992

17. Greenspan D and Greenspan JS: Oral lesions associated with HIV infection. In: AIDS and other manifestations of HIV infection. Wormser G P Ed. 489-498. Raven Press, 1992

18. Greenspan D and Greenspan JS: Oral manifestations of human immunodeficiency virus infection. In: Dental Clinics of North America. 37:1; 21-32, 1993

18. Greenspan D: The side effects of radiation therapy and chemotherapy on the oral structures. In: Malignant Tumors of the Maxillofacial region; Oral and Maxillofacial Clinics of North America. 5:2; 347-353, 1993

RESEARCH GRANTS:

Funded

1978
Pilocarpine and salivary gland function - $3,219.00
School of Dentistry Research Committee, UCSF

1979-82
Clotrimazole troches in oral candidiasis - $2,000.00
Delbay Pharmaceuticals

1978-81
Lymphocyte function in recurrent oral ulceration - $52,000.00
NIDR-DEO 4736
Co-investigator, 15% effort

1978-82
Immunopathogenesis of recurrent aphthous stomatitis and Behcet's syndrome - $87,000.00
NIDR-DE 84576
Co-investigator

1980-84
Ketoconazole tablets in oral candidiasis - $3,000.00
Janssen Co.

1982-87
Ketoconazole suspension in oral candidiasis - $6,000.00
Janssen Co.

1983-84
Treatment of oral candidiasis with Bay n 7133 - $11,000
Miles Pharmaceuticals

1984
Benzydamine HCl in chemotherapy-induced oral mucositis -$11,950
Dupont & Co

1984-87
Oral viral leukoplakia - a new lesion in association with AIDS - $38,000/Year 1, $68,000/Year 2, $59,000/Year 3
University of California Taskforce on AIDS
Co-investigator

1985-87
Itraconazole in oral candidiasis - $16,000
Janssen Company

1986-87
BW 515U and oral hairy leukoplakia - $20,000
University of California Systemwide Task Force on AIDS
UCSF AIDS Clinical Research Center

1986-88
Nystatin pastille in the treatment of oral candidiasis - $22,000
ER Squibb and Sons
Principal Investigator

1986-
Oral manifestations of AIDS, Epidemiology - $114,130/yr.
NIH NIDR RO1-DE-08112-01, 9/29/86 - 8/31/89
Co-investigator

1987-92
Oral manifestations of AIDS - $642,688/Year 1
NIH NIDR PO1-DE-07946, 4/1/87 - 3/31/92
Co-investigator, Project B

1987-89
Nystatin pastille in the prevention of oral candidiasis in AIDS and ARC - $100,000
ER Squibb and Sons
Principal Investigator

1987-88
Oral candidiasis in AIDS and ARC - $25,207
California Universitywide Task Force on AIDS
UCSF AIDS Clinical Research Center
Principal Investigator

1988-91
Smokeless tobacco, oral and other health effects -$742,432/Year 1
NIH NIDR POI-DE -08547
Co-investigator

1988-89
Evaluation of Peridex in the management of periodontal diseases and candida infections in HIV-positive individuals - $69,000
Procter and Gamble
Co-investigator

1988-89
Treatment and suppression of hairy leukoplakia with oral acyclovir - $119,000
Burroughs Wellcome
Principal Investigator

1988-89
Fluconazole in the treatment of oral candidiasis in patients with HIV infection - $40,000
Pfizer Inc
Co-Principal Investigator

1990-2
Evaluation of chlorhexidine in the prevention of oral candidiasis - $100,000
Procter and Gamble
Principal Investigator

1990-3
Use of pilocarpine in a dose ranging and maintenance study of radiation-induced xerostomia $23,000
MGI Pharma
Principal Investigator

1992-97
Oral manifestations of AIDS
NIH NIDR PO1-DE-07946,
Principal Investigator: Core B

1992-95
Self care intervention to decrease mucositis
NIH RO1-CA 55555-01
Co-investigator

1992-
Fluconazole solution in the treatment of oral candidiasis in patients with HIV infection - $45,000
Pfizer Inc
Co-Principal Investigator

1992-3
Evaluation of the use of MOTS in patients with oral ulcerations -$16,000
Alza
Principal Investigator

1992-3
Evaluation of the use of MOTS-nystatin in patients with oral candidiasis and HIV infection
$60,000
Alza
Principal Investigator

1993-4
Candidiasis in women at risk for AIDS
$22,748 year 1
Universitywide AIDS Research Program, University of California
Principal Investigator

1993-
Itraconazole solution in the treatment of oral candidiasis
$69,000
Janssen
Principal Investigator

CURRICULUM VITAE

JOHN S. GREENSPAN

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CURRICULUM VITAE

Name: John Simon Greenspan — Updated: December 1993

Current title & department: Professor of Oral Biology and Oral Pathology, Department of Stomatology, School of Dentistry, and Professor, Department of Pathology, School of Medicine, University of California, San Francisco

EDUCATION

Dates Attended	Institution & location	Degrees conferred, title or status	Major subject
1956-59	Royal Free Hospital Medical School (University of London)	B.Sc., 1st Class Honors	Anatomy
1959-62	Royal Dental Hospital of London, School of Dental Surgery (University of London)	B.D.S., Honors in Surgery & Dental Surgery	Dentistry
1963-67	Royal Postgraduate Medical School & Royal Dental Hospital of London, School of Dental Surgery (University of London)	Ph.D.	Experimental Pathology

Thesis title: "Studies on the histochemistry of normal rat salivary glands and variations produced by certain experimental procedures"

OTHER QUALIFICATIONS

1963	Royal College of Surgeons of England	Licentiate in Dental Surgery
1971	Royal College of Pathologists	Member (by examination)
1983	Royal College of Pathologists	Fellow

POSTGRADUATE STUDIES

1963-64	Royal Postgraduate Medical School (University of London); Department of Pathology; with Professor A.G.E. Pearse	Histochemistry and Experimental Pathology
1965-70	Royal Dental Hospital of London, School of Dental Surgery; with Professor R.B. Lucas	Oral Pathology
1969-71	Department of Pathology; St. George's Hospital Medical School (half-time)	General Pathology

LICENSURE

1963-present	United Kingdom	Registered Dental Practitioner
1977	National Board Examination, Part I & II, American Dental Association	
1983-present	California State Board of Dental Examiners	Special Permit # S-91

OTHER TRAINING

1988	Leadership Development Program, Center for Creative Leadership, Greenborough, NC

PRINCIPAL POSITIONS HELD

1963-65	Oral Pathology, Royal Dental Hospital of London, School of Dental Surgery (University of London) (RDH SDS)	Assistant Lecturer
1965-68	Oral Pathology (RDH SDS)	Lecturer
1968-72	Oral Pathology (RDH SDS)	Senior Lecturer
1972-73	School of Dentistry and School of Medicine, University of California, San Francisco (UCSF)	Visiting Associate Professor in Oral Pathology
1972-76	Oral Pathology (RDH SDS)	Senior Lecturer with Consultant Status
1976-present	School of Dentistry (UCSF)	Professor of Oral Biology and Oral Pathology
1976-88	School of Dentistry (UCSF)	Director, Graduate Program in Oral Biology
1977-88	Department of Oral Medicine and Hospital Dentistry [subsequently Department of Stomatology] (UCSF)	Vice-Chairman
1981-89	Division of Oral Biology (UCSF)	Chairman
1982-present	School of Dentistry (UCSF)	Coordinator of Basic Sciences
1988-89	Department of Stomatology (UCSF)	Acting Chairman
1989-present	Department of Stomatology (UCSF)	Chairman

ANCILLARY POSITIONS HELD CONCURRENTLY

1959-62	Royal Dental Hospital of London, School of Dental Surgery (while a dental clinical student)	Demonstrator in Oral Anatomy
1962	RDH of London	Assistant House Surgeon in Conservation and Periodontology
1963	Department of Pathology, Royal Postgraduate Medical School (University of London)	Fellow
1969-71	Department of Pathology, St. George's Hospital Medical School (University of London)	Fellow
1973-76	St. John's Hospital and Institute of Dermatology, London	Consultant in Oral Pathology
1972-76	St. George's Hospital, London	Consultant Dental Surgeon
1976-present	School of Medicine, UCSF Department of Pathology	Professor
1982-present	UCSF AIDS Specimen Bank	Director
1987-present	UCSF Oral AIDS Center	Director
1987-1991	UCSF Dental Clinical Epidemiology Program	Associate Director
1992-present	UCSF AIDS Clinical Research Center	Director

CLINICAL TRAINING & EXPERIENCE

Hospital Training and Practice

1963-64	Two half-days per week in Oral Diagnosis and Oral Surgery and one half-day per week in Periodontology
1965-71	Two half-days per week in Periodontology and Oral Medicine
1972-76	Two half-days per week as Consultant running Oral Medicine clinics at the Royal Dental Hospital and at St. George's Hospital, London
1981-90	Sjogren's Syndrome Clinic, UCSF

Private Practice

1963-76	An average of one evening and one half-day per week in general dental practice

Oral Pathology Service

1969-76	Assisted Professor R.B. Lucas in the submission and evaluation of material which resulted in the publication of the W.H.O. Classifications of Odontogenic Tumors and of Salivary Gland Tumors and the AFIP Fascicle on Salivary Gland Tumors
1969-72, 73-76	Conducted Royal Dental Hospital biopsy service (800 biopsies per year)
1972-73, and 78-present	Regular responsibility for the Oral Pathology biopsy service at UCSF, on rotation (20% at present)

HONORS AND AWARDS

Undergraduate Prizes

1957	Class Prize in Anatomy
1960	Certificates in Medicine and Surgery, and in Prosthetics
1962	Baldwin Scholarship (Conservative Dentistry)
1962	Lonnon Bursary (Pedodontics and Orthodontics)
1962	Sidney James Kaye Prize (Oral Medicine and Oral Pathology)
1962	Saunders Scholarship and Gold Medal for the best overall performance in the Dental School

Other Awards and Honors

1958-59	Nuffield Dental Scholar (support for intercalated B.Sc. degree in Anatomy)
1960	Prosector at the Royal College of Surgeons
1962	Undergraduate Award of the American Academy of Oral Medicine
1968	Storer-Bennett Research Scholarship (a prize awarded triennially to a graduate of the Royal Dental Hospital School of Dental Surgery on the basis of a thesis submitted in competition)
1980-present	Faculty Member, Omicron Kappa Upsilon
1980	Gurley Lecturer, UCSF School of Dentistry Alumni Association
1982-present	American Men and Women of Science
1982-present	Fellow, American College of Dentists
1983	Visiting Scholar, University of Washington (Seattle)
1984	Visiting Scholar, University of Iowa (Iowa City)
1985	Pindborg Lecturer, Scandinavian Society for Oral Pathology and Oral Medicine
1985-present	Fellow, American Association for the Advancement of Science
1986	Ship Memorial Lecture, World Dental Congress, Jerusalem
1988	Faculty Research Lecturer, UCSF School of Dentistry
1988-present	Who's Who in California
1989	Seymour J. Kreshover Lecture Award, National Institute of Dental Research, National Institutes of Health
1990	Sc.D. (h.c.) Georgetown University
1990-present	Honorary Senior Lecturer, Guy's Hospital Dental School, University of London
1990-present	International Who's Who of Intellectuals
1990-present	The International Directory of Distinguished Leadership
1990-present	Who's Who in the West
1990-present	Dictionary of International Biography
1990	8th Roberts Memorial Lecturer, University of Sheffield
1991-present	Men and Women of Distinction

Other Awards and Honors, continued

1991-present	Two Thousand Notable American Men
1991	Experimental Pathology Group, International Association for Dental Research, Award for Outstanding Research
1992	Nevin Lecturer, University of Colorado, Denver
1993	Who's Who in American Education
1993	Oral Biology Research Award, International Association for Dental Research
1993	University Service Award, Academic Senate, UCSF
1993-present	Fellow, Pierre Fauchard Academy

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS:

1959-86	Anatomical Society (U.K.)
1960-76	Zoological Society (U.K.)
1964-present	International Association for Dental Research
1964-70	Royal Microscopical Society (U.K.)
1964-76	Royal Society of Medicine (U.K.)
1968-82	British Dental Association
1969-present	Pathological Society (U.K.)
1970-present	Oral Pathology Society (U.K.)
1971-present	Royal College of Pathologists (U.K.)
1973-present	American Academy of Oral Pathology
1976-present	American Association for Dental Research
1976-present	Bay Area Teachers of Oral Pathology
1977-present	American Association for the Advancement of Science
1978-present	International Association of Oral Pathologists
1979-present	San Francisco Dental Society
1979-present	American Dental Association
1979-present	California Dental Association
1979-present	California Society of Oral Pathologists
1979-present	Histochemical Society
1982-present	American Association of Pathologists
1982-present	American College of Dentists
1984-present	British Society for Oral Medicine
1987-present	Northern California AIDS Epidemiology Consortium (Founder Member)
1989-present	International AIDS Society (Founder Member)
1989-present	American Association of Oral Biologists (Founder Member)
1991-present	American Public Health Association

PROFESSIONAL ACTIVITY

PROFESSIONAL ORGANIZATION ACTIVITIES

1975-76	Royal Society of Medicine (U.K.) Section of Immunology	Council
1975,77,79, 81,82,83, 84,85,86,87	International Association for Dental Research, or American Association for Dental Research Annual Meetings	Session Chairman
1979-81	International Association of Oral Pathologists	Committee on Diagnostic Criteria

PROFESSIONAL ORGANIZATION ACTIVITIES, continued

1977-83	San Francisco Section, American Association for Dental Research	Secretary 1977-80 Councillor 1981-83
1980-90	Council, American Association for Dental Research	Member
1983-90	Board of Directors, American Association for Dental Research	Member
1982-85	Fellowship Committee, American Association for Dental Research	Member Chair, 1983-85
1981-85	Experimental Pathology Group AADR/IADR	Executive Committee, 1981-85 Councillor 1981-83 President 1983-84
1983, 1986-88	Council, International Association for Dental Research	Member
1985-89	Publication Committee, AADR	Member, Chair 1986-87
1985-90	Sjogren's Syndrome Foundation	Medical Advisor Board
1986-87	American Association for Dental Research	Vice President
1987-88	American Association for Dental Research	President-elect and Program Chair
1987-90	American Dental Association, Council on Dental Research	Member
1987-90	Steering Committee, VI International Conference on AIDS (International and Local Organizing Committees)	Member
1988-89	American Association for Dental Research	President
1988-89	American Association for Dental Research ad hoc New Frontier Committee	Member
1988-89	American Association for Dental Research Long Range Planning Committee	Member
1988-present	American Dental Association Council on Dental Therapeutics	Consultant
1989-90	American Association of Dental Schools Advisory Committee on Blood-borne Infectious Diseases	Member
1990	WHO, NIDR, Fogarty Center	Organizer, First International Course on Oral AIDS
1990-92	American Association for Dental Research Distinguished Scientist Award Committee	Chair
1991-92	American Association for the Advancement of Science, Section of Dentistry	Chair-elect
1991-94	American Association for the Advancement of Science, Section Committee, Section of Medicine	Member
1992-93	American Association for the Advancement of Science, Section of Dentistry	Chair
1992-93	American College of Dentists, Action Committee Presentation of Research Awards	Member
1992-93	Second International Workshop on the Oral Manifestations of HIV Infection	Organizer and Co-Chair
1993-present	Steering Committee, 10th International Conference on AIDS	Member

PROFESSIONAL ORGANIZATION ACTIVITIES, continued

1993-94	American Association for the Advancement of Science, Council	Member

SERVICE TO PROFESSIONAL PUBLICATIONS

1968-present	Archives of Oral Biology	Editorial Consultant
1977-83	Journal of Dental Research	Editorial Advisory Board
1980-present	Journal of the California Dental Association	Editorial Consultant
1980-92	Journal of Oral Pathology	Associate Editor
1988-present	Journal of the Acquired Immunodeficiency Syndromes	Editorial Board
1976-present	Journal of Periodontal Research	Ad hoc Reviewer
	Clinical Immunology and Immunopathology	
	Archives of Dermatology	
	Archives of Pathology	
	American Journal of Pathology	
	Arthritis & Rheumatism	
	Journal of Dental Education	
	Oral Surgery, Oral Medicine, Oral Pathology	
	Gastroenterology	
	Journal of Clinical Immunology	
	Journal of Histochemistry and Cytochemistry	
	Journal of the American Academy of Dermatology	
	AIDS	
	New England Journal of Medicine	
1987-89	AIDS Alert	Editorial Board
1990-present	Marcel Dekker, Inc.	Editor-at-Large
1990-present	American Health Magazine	Editorial Advisory Board
1990-present	American Journal of Dentistry	Editorial Board
1991-present	Genitourinary Medicine	Editorial Board

OTHER PROFESSIONAL SERVICE

Grant/Contract Reviews

1974-present	Medical Research Council (U.K.)
1977-present	National Institute for Dental Research (ad hoc reviews, review of intramural program)
1980-present	Veterans' Administration, scientific reviewer
1981-present	Medical Research Council (Canada), ad hoc reviewer
1982-present	Member, Panels of Independent Assessors, National Health & Medical Research Council, Commonwealth of Australia and Anti- cancer Campaign of Victoria
1988	Member, Ad Hoc Review Panel, OMB-1 Study Section

External Examiner

1978, 1987	Ph.D. degree, University of Queensland, Brisbane, Australia
1985, 1987	Ph.D. degree, University of Melbourne, Australia
1991	University of Queensland (reviewer of basic science programs)

Consultancies

1980	Chair, Soft Tissue Disease Panel NIDR
1985	NIDR Extramural Program Advisory Committee
1987	NIDR AIDS Task Force
1988-present	Oral Aging Research Center, University of Iowa
1988-present	Virology Research Program, University of Texas Dental Branch, Houston
1988-present	European Economic Community Taskforce on AIDS, Committee on Oral Aspects
1988-present	Council on Dental Therapeutics, American Dental Association (Consultant in Pathology)
1988-89	National Institute of Dental Research, Long Range Plan for the 90's
1989	Participant, NIDR/Fogarty Center Workshop on International Collaboration in Oral Health Research
1991-present	American Cancer Society, San Francisco Unit, Speakers Bureau
1993-present	Member, California Statewide Interagency HIV/AIDS Coordinating Council (UC representative)

U.K. National Health Service

1974-76	Vice-Chairman, Merton, Sutton and Wandsworth Area (T) Dental Advisory Committee
1975-76	Chairman, S.W. Thames Regional Dental Advisory Committee

SCIENTIFIC AND PROFESSIONAL MEETINGS & WORKSHOPS ATTENDED

International

3rd International Bone & Tooth Symposium, Davos, 1965 (paper)
2nd International Conference on Oral Biology, London, 1965 (paper)
WHO Panel on Odontogenic Tumors, 1979 (observer)
WHO Panel on Bone Tumors, 1970 (observer)
International Association for Dental Research, London, 1975; Copenhagen, 1977 (papers/posters); Sydney, 1983 (paper); The Hague, 1986 (Symposium organizer and speaker); Dublin, 1989 (Symposium organizer and presenter); Acapulco, 1991 (Symposium speaker), Glasgow, 1992
European Immunology Meeting, Amsterdam, 1975 (papers)
2nd International Congress of Immunology, Brighton, 1974 (paper, workshop participant)
4th International Congress of Immunology, Paris, 1980 (workshop participant)
International Dental Federation (FDI), Madrid, 1978 (featured speaker); Washington, 1988
National Dental Association of Mexico - International Congress, 1979 (featured speaker)
International Association of Stomatology, London, 1981 (paper)
8th International Conference on Oral Biology, Sydney, 1983 (invited featured speaker)
International Association of Oral Pathologists, Amsterdam, Holland, 1984 (paper)
3rd International Workshop on Papillomaviruses, Kyoto, Japan, 1984 (invited speaker)
1st International Conference on AIDS-related Syndromes, Irvine, CA, 1984 (invited speaker)
1st International Conference on AIDS, Atlanta, GA, 1985 (poster)
4th International Workshop on Papillomaviruses, Kuopio, Finland, 1985 (invited speaker)
2nd Dows Symposium, Oral Mucosa, Iowa City, IA, 1985 (organizing committee, speaker)
1st World Dental Congress, Jerusalem, 1986 (invited featured speaker)
5th International Workshop on Papillomaviruses, Cold Spring Harbor, New York, 1986 (workshop participant)
2nd International Conference on AIDS, Paris, 1986 (poster)
3rd International Conference on AIDS, Washington, DC, 1987 (poster)
6th International Workshop on Papillomaviruses, Washington, DC, 1987 (workshop participant)

International, continued

3rd International Conference on Immunobiology and Prophylaxis of Human Herpesvirus Infections, Marco Beach, Florida, 1987 (participant)
Wellcome International Antiviral Symposium, Monaco, 1987 (participant)
1st International Symposium on Oral Manifestations of AIDS, San Diego, CA, 1988 (invited featured speaker, seminar chair, proceeding editor)
Joint meeting of International Association of Oral Pathologists and American Academy of Oral Pathology, Philadelphia, 1988 (invited symposium participant)
2nd World Dental Congress, Jerusalem, 1988 (invited featured speaker)
4th International Conference on AIDS, Stockholm, Sweden, 1988 (invited participant)
11th International Conference on Oral Biology, Hong Kong, 1988
International Dental Federation (FDI), Washington, DC, 1988 (featured symposium speaker)
Cancer Research Campaign International Conference on EBV, Oxford, 1989 (poster, paper)
Workshop on International Collaboration for Oral Health Research, 1989 (participant)
5th International Conference on AIDS, Montreal, 1989 (participant)
WHO/GPA & Fogarty International Center HIV/AIDS Surveillance and Epidemiology Workshop, 1989 (discussion leader)
6th International Conference on AIDS 1990 (invited speaker)
10th International Workshop on Papillomaviruses, Seattle, Washington, 1991
7th International Conference on AIDS Florence, 1991 (invited speaker, satellite symposium)
Annual Session, the Australian and New Zealand Division, IADR, Brisbane, Queensland, Australia, 1991 (keynote speaker)
8th International Conference on AIDS Amsterdam, 1992 (invited speaker, satellite symposium)
2nd International Congress on Oral Medicine, Edinburgh, 1992 (invited speaker)
5th International Symposium on Epstein-Barr Virus and Associated Diseases, Annecy, France, 1992
2nd International Workshop on the Oral Manifestations of HIV Infection, San Francisco, 1993 (organizer and co-chair)
9th International Conference on AIDS, Berlin, 1993

National

American Association for Dental Research or British Division, IADR, 1964, 1965, 1966, 1969, 1973, 1974, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 193 (papers/posters/symposium speaker)
American Academy of Dermatology, San Francisco, 1978 (guest speaker)
American Academy of Oral Pathology, 1973, 1974, 1977, 1978, 1979, 1980, 1982, 1984, 1985, 1986 (papers), 1988 (featured symposium speaker), 1992 (speaker)
American Association for Cancer Research, San Diego, 1983
American Dental Association, 1972, 1986, 1988 (featured symposium speaker)
Anatomical Society (UK), 1965, 1966, 1979 (papers)
Bone and Tooth Society (UK), 1965, 1966, 1969 (papers)
British Society for Immunology, 1973 (paper), 1974, 1975, 1976, 1979
Malacological Society of London, 1969 (symposium speaker)
Oral Pathology Club and Oral Pathology Society (UK), 1969, 1970, 1971, 1973, 1974, 1975 (case presentations/papers)
Pathological Society (UK), 1973 (paper)
Royal College of Surgeons of England, 1973 (symposium speaker)
Royal Microscopical Society, 1964 (paper), 1965, 1966, 1967, 1968, 1969
UCLA Molecular Biology Symposium - Immune regulation, 1982
UCLA Molecular Biology Symposium - Papillomaviruses, 1985 (invited speaker)
Scandinavian Society for Oral Pathology and Oral Medicine, Turku, Finland, 1985 (keynote lecturer)
Finnish Dental Society, 1988 (featured symposium speaker)
American Academy of Oral Medicine, Annual Meeting, 1989, 1990

National, continued

National Dental Association 1990 (invited speaker)
Academy of General Dentistry 1990 (invited speaker)
Keystone Symposium - Molecular Biology of Human Pathogenic Viruses, 1991
Japanese Dental Association, Yokohama 1993 (invited speaker)
American Public Health Association 1993

Regional

Pacific Skin Research Club, 1980, 1981 (papers)
California Dental Association, Scientific Session (guest speaker), 1980, 1981, 1986
Eastern Society of Teachers of Oral Pathology, 1972 (case presentations/papers)
Western Society of Teachers of Oral Pathology, 1976, 1977, 1978 (case presentations)
Mid-Winter Immunology Meeting, Asilomar, 1973, 1977, 1978, 1979, 1981
Northern California Section, American Society for Microbiology, 1985 (invited speaker)
Arizona Dental Foundation for Research and Education, 1989 (featured symposium speaker)
University of Colorado, Key Leadership Conference, 1992 (invited speaker)

INVITED PAPERS, LECTURES, PRESENTATIONS NOT LISTED BELOW

1972-82	University of California, San Francisco School of Medicine: Departments of Dermatology, Ophthalmology, Pathology and Medicine (Rheumatology, Infectious Diseases) Proctor Foundation
1973-82	Universities of Maryland (Baltimore), Texas (Houston), California at Los Angeles (several times), Alabama (Birmingham), Baylor (Dallas), NIDR (Bethesda), Northwestern, Iowa, Washington (Seattle), Forsyth Dental Center (Boston), Rochester, University of Pacific, School of Dentistry, San Francisco (frequent invited lecturer), 1980- Kaiser Hospital San Francisco (Medical Grand Rounds)

United Kingdom

1973-82	Universities of Glasgow, Sheffield M.R.C. Clinical Research Centre, Harrow Department of Immunology, Department of Venereal Disease Medicine, of the Middlesex Hospital Medical School, London Institute of Dental Surgery, Guy's Hospital Medical School, London

Also lectured to medical students, medical practitioners, and postgraduate dermatology students on oral diseases and have conducted twelve all- day continuing education courses in Immunology and Oral Pathology. Lectured to over 20 dental societies on Dentistry in the British National Health Service and gave regular guest lectures at the Letterman Army Medical Center and at the Department of Pathology, Oak Knoll Naval Hospital

Presentations (detailed record maintained since 1983)

August 1983	"Microbial pathogenesis of oral soft tissue disease, invited speaker, Eighth International Congress of Oral Biology, Sydney, Australia
September 1983	"Viruses and oral cancer," Institute of Dermatology, London, U.K.

Presentations, continued

December 1983	"Microbial pathogenesis of oral soft tissue disease," Visiting Scholar, School of Dentistry, University of Washington, Seattle
February 1984	"Peculiarities of oral cyst histopathology," Pathology Department, Oak Knoll Naval Hospital, Oakland, Calif.
March 1984	"Monoclonal antibodies and mononuclear cells in diagnosis and investigation in oral pathology," Symposium presentation, International Association of Dental Research, Dallas, Texas
May 1984	"Viral components in oral leukoplakia associated with AIDS," Forsyth Dental Center, Boston, Mass.
June 1984	"Oral 'hairy' leukoplakia," St. John's Hospital for Skin Disease, London
July 1984	"Immunology and oral pathology," all-day continuing education course, UCSF
August 1984	"Oral viral leukoplakia and AIDS - the role of papillomaviruses," Middlesex Hospital Medical School, Department of Venereal Disease Medicine, London
August 1984	"Oral 'hairy' leukoplakia in association with AIDS - a papillomavirus lesion?" 3rd International Workshop on Papillomaviruses, Kyoto, Japan
September 1984	"Viruses and oral cancer," Aichi-Gakuin University, School of Dentistry, Nagoya, Japan
September 1984	"Oral 'hairy' leukoplakia in association with AIDS," Kaposi's Sarcoma Clinic, UCSF
October 1984	"Oral 'hairy' leukoplakia - a tale of two viruses," National Institute of Dental Research, Bethesda, Maryland
October 1984	"Oral 'hairy' leukoplakia - a tale of two viruses," Georgetown University School of Medicine, Department of Pathology, Washington, DC
November 1984	"Oral 'hairy' leukoplakia and AIDS," Dean's Council, School of Dentistry, UCSF
November 1984	"New approaches to the etiology of oral epithelial lesions - the role of viruses," Visiting Scholar, Dows Research Institute, University of Iowa, Iowa City, Iowa
December 1984	"Papillomaviruses and mucosal disease - the missing link?", Dean's Seminar, UCSF School of Dentistry
December 1984	"EBV and HPV in oral hairy leukoplakia," International Conference on AIDS-related Syndromes, Irvine, Calif.
February 1985	"Oral manifestations of AIDS," Central Association of Physicians and Dentists, Aspen, Colorado

Presentations, continued

March 1985	"AIDS research and care at UCSF," UCSF Alumni Delegation, Sacramento, Calif.
March 1985	"Histopathology of Sjogren's Syndrome," Pathology Staff Conference, Oak Knoll Naval Hospital, Oakland, Calif.
March 1985	Presentations at UC Systemwide Task Force, San Diego, Calif.: 1) "Medico-legal aspects of AIDS research," 2) "Oral hairy leukoplakia," and 3) "The UCSF AIDS Clinical Research Center"
March 1985	"Viruses and oral leukoplakia," Dermatology Rounds, UCSF
April 1985	"Papillomaviruses and other viruses in oral leukoplakia," UCLA Molecular Biology Symposium, Steamboat Springs, Colorado
April 1985	"Oral hairy leukoplakia shows evidence of both papillomavirus and EBV," 1st International Congress on AIDS, Atlanta, Georgia
June 1985	"Pathology of AIDS," Dept. of Pathology, Oak Knoll Naval Hospital, Oakland, Calif.
June 1985	"Pathogenesis of oral viral lesions in AIDS," Guys Medical School, London, England
July 1985	"Oral aspects of AIDS," Institute of Dental Surgery, University of London, England
July 1985	"Virology of oral hairy leukoplakia," Department of Virology, Institut Pasteur, Paris
July 1985	"Oral lesions of AIDS," German Cancer Research Center, Heidelberg, Germany
August 1985	"Oral manifestations of AIDS retrovirus infection," Dental School, University of Glasgow, Scotland
August 1985	"Oral features of AIDS," Pindborg Lecture, Scandinavian Society of Oral Pathology and Oral Medicine, Turku, Finland
August 1985	"Search for papillomavirus in oral hairy leukoplakia," Fourth Workshop in Papillomaviruses, Kuopio, Finland
August 1985	"Recent advances in oral cancer," University of Helsinki, Finland
October 1985	"Oral lesions in family practice," Division of Family and Community Medicine, University of California, San Francisco
October 1985	"Oral manifestations of AIDS," Second Dows Symposium, Iowa City, Iowa
October 1985	"EBV-DNA in oral hairy leukoplakia," Department of Pathology, University of California, Davis, Calif.

Presentations, continued

October 1985	"Oral hairy leukoplakia - virological aspects," Northern California Branch, American Society for Microbiology, Santa Cruz, Calif.
October 1985	"Oral research implications of AIDS," NIDR Extramural ProgramAdvisory Committee, Bethesda, Maryland
November 1985	"Challenges and opportunities in AIDS research," Bethesda Research Labs, Rockville, Maryland
November 1985	"Oral research implications of AIDS," NIDR Intramural AIDS Taskforce, Bethesda, Maryland (Co-chair)
November 1985	"Oral features of AIDS-virus infection," Center for Interdisciplinary Research in Immunology, UCLA, Los Angeles,Calif.
November 1985	"Research career opportunities in dentistry," UC Berkeley Predental Society, Berkeley, Calif.
December 1985	"AIDS," Academy of General Dentistry, Programs in Hartford, Connecticut, Boston, Massachusetts and Augusta, Maine
January 1986	"Lesions arising from the odontogenic apparatus," Department of Pathology, Oak Knoll Naval Hospital, Oakland, California
January 1986	"AIDS Symposium," organizer and speaker, half-day course, UCSF Dental Alumni meeting, San Francisco
February 1986	"Oral epithelial disease and viruses," Graduate Group in Experimental Pathology, UCSF
March 1986	"The whole Epstein-Barr virus genome is present in oral hairy leukoplakia tissue," American Association for Dental Research, Washington, DC
May 1986	"AIDS - scientific basis and oral implications," California Dental Association, Anaheim, California
May 1986	"Oral hairy leukoplakia - a new AIDS-associated lesion," American Academy of Oral Pathology, Toronto, Canada
May 1986	"Oral hairy leukoplakia and AIDS - the application of molecular biology to oral pathology," Conference on Molecular Approaches to the Control of Oral Disease, University of Rochester, New York
June 1986	"Unique expression of Epstein-Barr virus in AIDS-associated oral hairy leukoplakia," International Conference on Acquired Immunodeficiency Syndrome (AIDS), Paris, France
June 1986	"Overview and epidemiology," Symposium on Oral Health Research Implications of AIDS, International Association for Dental Research, The Hague, The Netherlands

Presentations, continued

July 1986	"The role of Epstein-Barr virus in the pathogenesis of oral mucosal lesions," The London Hospital Dental Institute, London, UK
July 1986	"The challenge of AIDS," Irwin Ship Memorial Lecture, World Dental Conference, Jerusalem, Israel
July 1986	"The pathology of oral HIV lesions," Oral and Maxillofacial Surgery Rounds, UCSF
July 1986	"Common oral mucosal diseases," Division of Family & Community Medicine, UCSF
September 1986	"Laboratory investigation of oral manifestations of HIV infection--directions for future research," Biennial Congress, International Association of Oral Pathologists, University of Edinburgh, Scotland
September 1986	"Pathogenesis of hairy leukoplakia," European Economic Community, Commission of Health, Special Working Party on AIDS and Dentistry, Copenhagen, Denmark
September 1986	Testimony in opposition to Proposition 64, on behalf of the California Dental Association, at Joint Hearing of the Senate Health and Human Services Committee and the Assembly Election and Reapportionment Committees of the State of California, Sacramento, Calif.
November 1986	"HIV infection and AIDS - oral implications," Yale University and American Cancer Society, New Haven, Connecticut
November 1986	"Epidemiology and pathogenesis of HIV-associated oral disease," Medical/Dental Guild of California, San Francisco
February 1987	"Viral lesions of the mouth," invited symposium speaker, American Association for the Advancement of Science, Chicago, Illinois
February 1987	"Oral hairy leukoplakia and EBV," Infectious Disease Rounds, UCSF
February 1987	"Oral hairy leukoplakia and EBV," Dental Research Institute, University of North Carolina, Chapel Hill
February 1987	"AIDS and oral viral disease," Scripps Clinic, La Jolla, Calif.
March 1987	"Epidemiology and oral expression of AIDS," joint symposium, American Association of Dental Schools and American Association for Dental Research, Chicago, Illinois
March 1987	"Diagnosis and investigation of hairy leukoplakia using non-invasive techniques," American Association for Dental Research, Chicago, Illinois
March 1987	"Oral manifestations of HIV infection," Department of Public Health, City and County of San Francisco

Presentations, continued

April 1987	"HIV infection and AIDS," all-day Continuing Education seminar, University of Medicine & Dentistry of New Jersey, Newark
April 1987	"AIDS: the first six years - lessons from San Francisco," Cambridge Union Society, Cambridge University, England
April 1987	"Oral manifestations of AIDS: implications for dental practice," Alpha Omega Dental Fraternity, Eastman Dental Hospital, London
June 1987	"Diagnosis and investigation of hairy leukoplakia using non-invasive techniques," 3rd International Conference on AIDS, Washington, DC
June 1987	"Oral manifestations of HIV infection," Infectious Disease Rounds, Stanford University, Stanford, Calif.
June 1987	"AIDS, hepatitis and infection control," all-day continuing education course, School of Dentistry, UCSF
August 1987	"AIDS," a one-day course, Ohio State University, School of Dentistry, Columbus, Ohio
September 1987	"Viral diseases occurring in the mouth: etiology, pathogenesis, prevention and treatment," UCLA School of Dentistry, University of California, Los Angeles
September 1987	"Abnormalities of the odontogenic apparatus," Department of Pathology, Oak Knoll Hospital, Oakland, Calif.
October 1987	"The epidemiology and virology of HIV infection and its oral manifestation and implications for practice," California Dental Hygienists Association, Napa, Calif.
October 1987	"AIDS, hepatitis and infection control," all-day continuing education course, School of Dentistry, UCSF
October 1987	"Oral hairy leukoplakia and Epstein-Barr virus: possible clues to the biology of HIV infection," Genetic and Environmental Toxicology Association of Northern California, Menlo Park, Calif.
October 1987	"Latest on oral manifestations of AIDS," Department of Oral and Maxillofacial Surgery, Grand Rounds, UCSF
November 1987	"Oral pathology of AIDS," Otolaryngology Academic Conference, Department of Otolaryngology, UCSF
November 1987	"AIDS and the dental team: current progress and infection control," Palm Springs, Calif.
November 1987	"Basics for laypeople on AIDS and the immune system," UCSF Lecture Series on AIDS, UCSF
November 1987	"Services available at UCSF for people with AIDS/ARC," UCSF

Presentations, continued

December 1987	"Caring for the AIDS patient: the oral aspects," Division of Infectious Diseases, Department of Medicine, School of Medicine, UCSF
December 1987	"Diagnosis and investigation of oral hairy leukoplakia using non-invasive techniques," The Wellcome International Antiviral Symposium, Monte Carlo
January 1988	"Investigation of oral lesions of HIV infection. Clinicopathological conference on "Advances and controversies in oral and maxillofacial surgery," UCSF
January 1988	"Oral manifestations of HIV infection," UCSF Dental Alumni Association, San Francisco
January 1988	"AIDS - Challenges and Opportunities," in "Perspectives on oral manifestations of AIDS: diagnosis and management of HIV-associated infections," Procter and Gamble Oral Health Group, San Diego, Calif.
February 1988	"University/industry relations," University of California Health Sciences Committee, San Francisco
March 1988	"Oral manifestations of HIV infection: overview," NIDR AIDS Task Force meeting, Bethesda, Maryland
March 1988	"Ultrastructural study of EBV in oral hairy leukoplakia using postembedding indirect immunogold labeling," American Association for Dental Research, Montreal (annual meeting)
March 1988	"Change is constant," Presidential address, American Association for Dental Research, Montreal (annual meeting)
April 1988	"Oral AIDS Center research activities," AIDS Research Workshop, UCSF
April 1988	"AIDS, hepatitis and infection control," Continuing Education Program, School of Dentistry, UCSF
May 1988	"Immunologic factors and the acquired immune deficiency syndrome (AIDS)," International Association of Oral Pathologists and American Academy of Oral Pathology, Philadelphia, Pennsylvania
May 1988	"AIDS and dentistry," Alpha Omega Dental Society, London, UK
May 1988	"The end of the beginning," Faculty Research Lecture, UCSF
June 1988	"The oral manifestations of AIDS," Marin Medical Society AIDS Symposium, San Rafael, Calif.
June 1988	"AIDS and HIV infection - 1988, what we must know and what we must do," Second World Dental Conference, Jerusalem, Israel
June 1988	"Oral lesions of HIV disease: implications in pathogenesis, diagnosis and care," 4th International Conference on AIDS, Stockholm, Sweden

Presentations, continued

June 1988	"The UCSF AIDS Specimen Bank," 4th International Conference on AIDS, Stockholm, Sweden
June 1988	"HIV infection and oral cancer," 4th International Conference on AIDS, Stockholm, Sweden
June 1988	"EBV in oral hairy leukoplakia, an electron microscopic immunocytochemical study," 4th International Conference on AIDS, Stockholm, Sweden
July 1988	"The activities of the UCSF Oral AIDS Center and the UCSF AIDS Specimen Bank," Transfusion Medical Group, UCSF
August 1988	"Future trends in dental research," Oral B Laboratories, Burlingame, Calif.
September 1988	"Future trends in dental research," Alza Corporation, Palo Alto, Calif.
September 1988	"Opportunities in dental research," UCSF Section, American Association for Dental Research, Student Research Group, San Francisco, Calif.
October 1988	"HIV infection, pathogenesis and epidemiology," Joint World Congress of ADA and FDI, Washington, DC
November 1988	"AIDS, hepatitis and infection control," all-day continuing education course, School of Dentistry, UCSF
December 1988	"Oral manifestations of AIDS," Symposium on the Critical Care of the AIDS patient, San Francisco, Calif.
January 1989	"Odontogenic cysts and tumors," Oakland Naval Hospital, Oakland, Calif.
January 1989	"AIDS, infection control and the dental team", 14th Annual Yankee Dental Congress, Boston MA
January 1989	"AIDS - virology, epidemiology and prospects for 1989-1995" UCSF/PraktikertjanstAB, San Francisco, Calif.
February 1989	"Soft Tissues, salivary glands, and AIDS", NIDR Plan for the 90's Panel 4, Washington. DC
February 1989	"Papillomavirus - the neglected pathogen", Canadian MRC Visiting Scholar Program, University of British Columbia, Vancouver, B.C., Canada
March 1989	"Grantsmanship," UCSF Faculty Development Program, San Francisco, Calif.
March 1989	"AIDS, infection control and the dental team", 2nd Annual Foundation Symposium, Arizona Dental Foundation for Reasearch and Education, Phoenix, Arizona
March 1989	"AIDS and dental research", American Association for Dental Research and American Association of Dental Schools, San Francisco, Calif (joint symposium)

Presentations, continued

March 1989	"Virology and epidemiology of AIDS", American Association of Dental Schools, San Francisco, Calif (Annual Meeting)
April 1989	"Epithelial cell expression, diagnosis and therapy of EBV infection in oral hairy leukoplakia - an AIDS associated lesion", Epstein Barr Virus International Conference, Oxford, England
May 1989	"AIDS and HIV infection - what we must know and what we must do", all-day continuing education course, Redwood Empire Dental Society, Santa Rosa, California
June 1989	"Pathogens, probes and perceptions - the story of multidisciplinary oral AIDS research", Seymour J. Kreshover Lecture, NIDR-NIH, Washington D.C.
July 1989	"AIDS clinical and research update", UCSF Department of Oral & Maxillofacial Surgery Grand Rounds, San Francisco, California
August 1989	"AIDS and HIV infection - 1989, what we must know and what we must do", Scientific Session, California Dental Association, San Francisco, California
September 1989	"Advances in dental research and student opportunities", UCSF School of Dentistry, PreFall Student Seminar Series, San Francisco, California
September 1989	"AIDS and dental research", 1st International Medical/Dental Conference on AIDS Philadelphia, Pennsylvania.
November 1989	"Hairy leukoplakia in the setting of AIDS" National Cancer Institute, Workshop: The Role of Human Immunodeficiency Virus and Other Viruses in Acquired Immunodeficiency Syndrome-Associated Malignancies, Gaithersburg, Maryland.
December 1989	"Oral complications of HIV infection", Clinical Care of the AIDS Patient, UCSF School of Medicine, San Francisco, California
January 1990	"Update and future trends of research directed to the oral aspects of HIV infection", National Videosymposium on "Oral Manifestations of HIV Infection: Treatment and Management Considerations", Department of Veterans Affairs.
January 1990	"Impact of HIV infection on dental practice", National Videosymposium on "Oral Manifestations of HIV Infection: Treatment and Management Considerations", Department of Veterans Affairs.
March 1990	"Clinical manifestations and treatment of HIV and AIDS", continuing education course, UCSF School of Dentistry, "Spring Training for the Dental Team", Phoenix, Arizona.
March 1990	"AIDS Research at UCSF and the UCSF Oral AIDS Center", The Oral and Dental Research Trust and Guys Hospital Dental School, London, United Kingdom.

Presentations, continued

March 1990	"EBV infection of oral keratinocytes", The Ludwig Institute for Cancer Research, London, United Kingdom.
March 1990	"Oral hairy leukoplakia and EBV", Department of Cancer Studies, The Medical School, Birmingham University, United Kingdom.
March 1990	"The lessons of adversity - AIDS and Dentistry 1981-1990", The 8th Roberts Memorial Lecture, the University of Sheffield, United Kingdom.
April 1990	"The lessons of adversity - AIDS and Dentistry 1981-1990", The U.S. National Dental Student Research Conference, San Francisco, California.
April 1990	"The lessons of adversity - AIDS and Dentistry 1981-1990", Keynote address, First Annual Dental Student Research Day, Northwestern University, Chicago, Illinois.
June 1990	"AIDS and HIV infection - 1990, what we must know and what we must do", College of Dental Surgeons of British Columbia, Vancouver, British Columbia.
June 1990	"Pathogenesis of oral lesions of HIV disease", Oral Biology Seminar, University of California - San Francisco.
June 1990	"EBV infection in oral hairy leukoplakia" VI International Conference on AIDS, San Francisco, California.
July 1990	"AIDS and HIV infection - Current knowledge and action", 38th Annual Meeting, Academy of General Dentistry, San Francisco, California.
July 1990	"Oral manifestations of AIDS", 77th Annual Convention, National Dental Association, Houston, Texas.
September 1990	"Management of herpes virus and other oral infections in the immunocompromised patient". Infectious Disease Symposium, Salt Lake City, Utah.
November 1990	"AIDS 1990", University of Kentucky College of Dentistry, Lexington, Kentucky.
November 1990	"AIDS 1990", Rhode Island Department of Health, Providence, Rhode Island.
December 1990	"Oral complications of HIV infection" Clinical Care of the AIDS Patient (UCSF) San Francisco, California.
February 1991	"Oral hairy leukoplakia: the mystery unfolds" UCSF Transfusion Medicine Weekly Seminar, Irwin Memorial Blood Centers, (UCSF) San Francisco, Calif.
February 1991	"AIDS and the Mouth 1991" University of Washington, School of Dentistry, Seattle, Washington.
February 1991	"AIDS and dentistry: what's on the horizon?", Continuing Dental Education, University of Washington.

Presentations, continued

April 1991	"Biology and epidemiology of HIV", AIDS and the Mouth 1991, University of Medicine & Dentistry of New Jersey, New Jersey.
April 1991	"Pathobiology and epidemiology of HIV" Science Transfer Seminar Organizer and Speaker, IADR/AADR, Acapulco, Mexico.
April 1991	"HIV and recognition of oral lesions and associated treatment" Scientific Frontiers in Clinical Dentistry, an Update at the National Institute of Dental Research, NIDR, Bethesda, Maryland.
April 1991	"AIDS and infection control" UCSF Spring 1991 Continuing Dental Education Courses, Stockton, California.
May 1991	"AIDS and dentistry 1991: the challenge continues" , The Ontario Dental Association's 124th Annual Spring Convention, Ontario, Canada.
June 1991	"AIDS and the mouth", The American Dental Hygiene Association, Orlando, Florida.
June 1991	"AIDS, the global epidemic" and "UCSF oral AIDS research", The U.K. Oral AIDS Research Group, London, U.K.
June 1991	"Epidemiology of the oral lesions of HIV" Satellite Symposium, the 7th International Conference on AIDS, Florence, Italy.
October 1991	"The impact of AIDS on dental research and practice" and "The oral lesions of HIV infection", The Australian and New Zealand Division, the IADR (keynote speaker) Brisbane, Australia.
October 1991	"AIDS and the mouth 1991", The Dental School, Queensland University, Brisbane, Australia.
October 1991	"AIDS and the mouth 1991", The Queensland Branch, Australian Dental Association, Townsville, Queensland, Australia.
October 1991	"Research in the department of Stomatology -- Doctor in the mouth" UCSF Capital Campaign Cabinet
November 1991	"The mouth is more than teeth", Brown Bag Lecture, San Francisco: Campus Tours/Speakers Bureau, University of California, San Francisco.
November 1991	"The UCSF oral AIDS epidemiology project", Third International Symposium on Oral AIDS, New York.
November 1991	"AIDS and Dentistry 1991", Havertown, Pennsylvania.
December 1991	"The oral lesions of HIV infection", Symposium on Clinical Care of the AIDS Patient, San Francisco, California
January 1992	"Oral manifestations of HIV-1 infection", Genentech, South San Francisco, CA

Presentations, continued

February 1992	"AIDS and Dentistry", Nevin Lecture, American Fund for Dental Health, University of Colorado School of Dentistry
February 1992	"Leadership in the response to AIDS/HIV", Rocky Mountain AIDS Educational Training Center, Denver, CO
February 1992	"Oral AIDS research", UCSF Community Forum on AIDS Research, UCSF, San Francisco, CA
March 1992	"Oral candidiasis and hairy leukoplakia", AADR Annual Session, Boston, MA
May 1992	"Epidemiology and biology of HIV and AIDS", National Taiwan University, Taipei, Taiwan
May 1992	"Occupational issues", Kaohsiung Medical College School of Dentistry, Kaohsiung, Taiwan
May 1992	"Oral manifestations of AIDS", American College Health Association, 70th Annual Meeting, San Francisco, CA
May 1992	"Oral manifestations of HIV infection - incidence of distinct oral manifestations - Candidiasis, Kaposi's syndrome, HIV associated rapid progressive periodontitis", European Research Group for Oral Biology, Zurich, Switzerland
May 1992	"Comparison of cytopathic changes in hairy leukoplakia with in-situ hybridization for EBV", American Academy of Oral Pathology, 46th Annual Meeting, San Francisco, CA
June 1992	"Dental handpiece sterilization controversy", CCDE, UCSF, San Francisco, CA
July 1992	"Hairy leukoplakia", Second International Congress on Oral Medicine, Edinburgh, U.K.
July 1992	"Epidemiology and significance of oral lesions of HIV infection", VIII International AIDS Conference, Amsterdam, The Netherlands
July 1992	"Diagnosis and grading of oral hairy leukoplakia and oral candidiasis", International AIDS Therapy Group, RAI Congress Centre, Forumzaal "Endpoints in HIV Clinical Trials", Amsterdam, The Netherlands
October 1992	"Oral complications of smokeless tobacco use," American Academy of Pediatrics, San Francisco, CA
November 1992	"The Academic Senate," Faculty Development Program, UCSF, San Francisco, CA
December 1992	"Oral complications of HIV infection," Clinical Care of the AIDS Patient, San Francisco, CA
January 1993	"Professional implications of AIDS/HIV," California Association of Dental Assisting Teachers Winter Conference, San Jose, CA

Presentations, continued

February 1993	"Epidemiology and Significance of Oral Lesions of HIV Infection" American Association of Oral and Maxillofacial Surgeons/American Academy of Oral Pathology, Clinical Congress, New York
February 1993	"Mucosal immunity: The first line of defense against AIDS" and "Molecular aspects of microbial adhesion" [session organizer], American Association for the Advancement of Science, Boston, MA
September 1993	"HIV to OSHA," CCDE, UCSF, San Francisco, CA
October 1993	"Infection Control in General Dental Practice," 2nd Japanese Dental Association World Meeting, Yokohama
November 1993	"Basic Science Teaching in Dentistry," (How Can Dentistry Prepare for Change?), Exploring the Double Helix: Dentistry's New Frontier in DNA Technology, San Francisco
November 1993	"How Important are Oral Lesions in HIV Infection?" Dermatology Staff Conference, UCSF
November 1993	"AIDS 1993," Santa Clara Dental Society, San Jose, CA
December 1993	"Pathogenesis of Periodontal and Other Oral Opportunistic Infection in Association with HIV," Henry M. Goldman Symposium on Periodontology, Boston
December 1993	"Oral Complications of HIV Infection," Clinical Care of the AIDS Patient, San Francisco

POSTGRADUATE AND CONTINUING EDUCATION COURSES ATTENDED:

Regular attendee of UCSF Medical Grand Rounds, School of Dentistry postgraduate courses, and AAOP Continuing Education courses.

UNIVERSITY SERVICE

ROYAL DENTAL HOSPITAL AND SCHOOL, LONDON

1967-72	Executive Committee, Junior Staff Committee
1969-72	Secretary, Junior Staff Committee
1970-72	Chairman, Junior Staff Committee
1969-73	Secretary, Old Student and Staff Association
1970-76	Member, Academic Board
1970-76	Member of several Dental School and Hospital Appointments committees and similar committees at Chelsea College (University of London)
1972-76	Member, Dental Advisory Committee, Royal Dental Hospital (Committee of Consultants)
1973-76	Student Affairs Committee and Student Counselor

UNIVERSITY OF LONDON

1971-76	Member of the Board of Studies in Dentistry and its Sub-committee on Pathology and Periodontology

UNIVERSITY OF CALIFORNIA, SYSTEMWIDE

1979-80	Consultant, President's Task Force on OMB A21
1979-80	Alternate member, University Committee on Research
1980-81	Member, University Committee on Research
1981	Member, Joint Advisory Committee on the selection of a Chancellor for the San Francisco campus
1981	Consultant, Committee on Rights to Intellectual Property
1981-86	Member, Dental Health Care Insurance Subcommittee, Committee on Faculty Welfare
1983-85	Member, Subcommittee on Dentistry, Academic Planning Program Review Board (APPRB), Health Sciences Committee
1983-85	Member, Academic Council of the Academic Senate
1984-87	Chair, AIDS Task Force Specimen Banking Committee
1986-91	Member, Health Sciences Committee (HSC-APPRB) (Chair for three years, 1989-1991)
1988-91	Member, Subcommittee on Health Sciences Support Resources, HSC-APPRB
1989-91	Member, Academic Program Planning Review Board (APPRB)
1990-91	Chair, Organizing Committee, Colloquium on Clinical Training in Health Science, HSC-APPRB
1991-present	AIDS Policy Steering Committee
1991-92	Member, Committee to Review the Education Abroad Program for UK/Ireland for the Academic Senate
1992	Chair, Committee to Review the Program in Analytical Cytology
1992-present	Alternate member, Academic Council of the Academic Senate

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

Academic Senate

1976-present	Twenty-eight ad hoc Review Committees of the Budget Committee or of the Committee on Academic Personnel (Chair of seven) and five department chair/dean/ organized research unit director, ad hoc Stewardship Review Committees (Chair of one)
1977-86, 92-93	Representative Assembly (School of Dentistry Representative 1977-79, ex officio 1979-86, 1992-1993)
1978-82, 92-present	Committee on Committees (At Large Representative)
1978-81	Committee on Research (Vice Chair 1979-80, Chair 1980-81)
1979-86, 92-present	Coordinating Committee (Chair 1983-85)
1980	Committee on Award for Excellence in Teaching
1981-83, 92-93	Vice Chair, San Francisco Division, Academic Senate
1983-85	Chair, San Francisco Division, Academic Senate
1987-90, 92-present	Committee on Academic Planning & Budget
1993	Committee to Plan Chancellor's Martin's Inauguration, Academic Senate

Chancellor's Committees

1976-77	Search Committee for Chairperson, Department of Restorative Dentistry
1976-79	Standing Committee for Review of Academic Administrator Appointments and Promotions (Chair, 1978-79)
1978-81	Member, Committee on Arts and Portraits
1980-present	Member, Committee for Chancellor's Distinguished Lectureship for Public Understanding of Science (Vice chair, 1986-87; Chair, 1987-88)
1980	Harris Award Committee
1981	Chancellor's Committee for University/Industry Relations
1981-present	Chancellor's Standing Advisory Panel on University/Industry Relations
1981-88, 92-93	Academic Planning Board
1982-85	Editorial Advisory Committee, UCSF Magazine
1982	Chair, Committee for Instructional Improvement Awards
1983-85	Member, Development Planning Committee, UC San Francisco Foundation
1983-85	Member, Chancellor's Council
1985-90	Member, Library Planning Committee
1986-88	Member, Task Force on Space Planning
1987-88	Member, Committee on the Future of UCSF
1988-present	Member, Chancellor's AIDS Advisory Council (1990-1992, member, Ad hoc subcommittee on the HIV-infected provider)
1988-89	Member, Committee to Organize 125th Anniversary Celebration
1990-present	Member, Campus Long Range Development Plan Committee ("Committee for the 21st Century") Member, Executive Committee
1991-present	Member, Board of Governors, Faculty Club
1991-93	Member, Committee on Indirect Costs and Conflict of Interest
1993-93	Chair, Search Committee for Senior Vice Chancellor, Academic Affairs

SCHOOL OF DENTISTRY

1976-79	Research Committee
1976-78,82-present	Basic Science Coordinating Committee (1982-present, Chair ex officio)
1976-present	Graduate Group in Oral Biology (Chair 1983-1990)
1977-present	Graduate Advisor in Oral Biology
1977-79	Student Advisor
1977-87	Student Status Committee, 2nd Year Dentistry
1977-87	Student Status Committee, 2nd Year Dental Hygiene
1978-79	Recruitment and Retention Program - Grants Advisory Committee, Faculty Advisor
1979-81,82-93	Educational Policy Committee
1978-84	Faculty Council
1979-81	Chair, Faculty Council and Chair, Faculty of the School
1987-1981-present	Dean's Executive Committee/Dean's Advisory Committee/Dean's Executive Group (1981 as Faculty Chair, 1982-present as Coordinator of Basic Sciences, 88-present also as Chair, Stomatology)
1982	Chair, Subcommittee on Modification of Departmental Structure of the School
1982-87	Chair, Subcommittee on Faculty Development
1981	Chair, Task Force to Review the Dental Hygiene Program
1982-present	Coordinator for Basic Sciences
1982-present	Clinical Sciences Coordinating Committee
1982-83	Chair, Search Committee for Director, Center for Craniofacial Anomalies
1985-present	Dean's Council

SCHOOL OF DENTISTRY, continued

1987-89	Pew Strategic Plan Steering Committee
1987-91	Associate Director, UCSF Dental Clinical Epidemiology Program
1987-present	Dean's Advisory Committee on Infection Control (subsequently Dean's Advisory Committee on Health and Safety)
1992-present	Undergraduate Mentorship Program
1993-present	Strategic Planning Committee
1993-present	Search Committee for Lee Hysan Chair in Oral Epidemiology, Department of Dental Public Health and Hygiene

Department of Stomatology (formerly Department of Oral Medicine and Hospital Dentistry)

1977-88	Vice-Chair of the Department
1977-82	Vice-Chair, Division of Oral Pathology
1977-present	Chair, five Search Committees for Assistant Professor
1977-present	Member, three further Search Committees for Assistant Professor
1977-80,84-present	Educational Policy Committee
1981-88	Safety Officer
1981-89	Chair, Division of Oral Biology
1983	Member, Search Committee for Associate Professor/Chair of Periodontology
1983-present	Member, Advisory Committee
1988-89	Acting Chair, Department of Stomatology
1989-present	Chair, Department of Stomatology

SCHOOL OF MEDICINE:

1982-present	Chair, AIDS Tissue Committee and Director, AIDS Specimen Bank
1984-present	Dean's Advisory Committee on AIDS (ex officio)
1985-86	Hammer Award Committee
1985-present	Executive Committee, AIDS Clinical Research Center
1987-present	Member, Executive Committee, UCSF Center for AIDS Research
1992-93	Acting Director, AIDS Clinical Research Center
1993-present	Director, AIDS Clinical Research Center
1992-present	Member, AIDS Vaccine Evaluation Group

Department of Dermatology/Cancer Research Institute

1982-86	Member, Kaposi's Sarcoma Study Group

Department of Epidemiology and Biostatistics

1990-91	Member, Search Committee for Professor of Epidemiology

Department of Laboratory Medicine

1982-88	Advisory Committee, Lawrence Livermore National Laboratory/UCSF Joint Program for Analytical Cytology
1984-87	Advisory Committee, Laboratory for Cell Analysis
1990	Member, two Search Committees (Cell Biologist & Immunologist)

Department of Medicine

1983-84	Member, AIDS Task Force

Department of Ophthalmology/Procter Foundation

1991	Chair, Search Committee for Professor

Department of Pathology

1977-84	Pathology 126 Committee

TEACHING

FORMAL SCHEDULED CLASSES FOR UCSF STUDENTS (current teaching only)

Qtr.	Acad. Yr.	Course No. & Title	Nature of Contribution	Units	Size
F	1992-93	Path 126: for dental, pharmacy and physical therapy students	1 lecture on immunopathology and AIDS	5	300
F	1992-93	Oral Pathology 127a	4 lectures	3	135
W	1992-93	Oral Pathology 127b	4 lectures	3	130
F	1992-93	Oral Pathology 208a	3 lab/seminars	3	9
F	1992-93	Nursing 278	2-hour seminar	--	25
S	1992-93	Oral Biol 220	1-hour seminar		
S	1993	OMFS 200	2-hour lecture	1.5	20

GRADUATE COURSES SPONSORED BY UCSF:

1980, 1981	Oral Histopathology Seminar	Organized and moderated 1-day course, 12 lectures		50
1982, 1984, 1986	Immunology and Oral Pathology	One all-day course	8 hours	120
1983	Oral Medicine Study Club	Lecture in Basic Immunology	1 hour	20
1987	AIDS, Hepatitis and Infection Control	Two all-day courses	8 hours	160
1988	AIDS, Hepatitis and Infection Control	Two all-day courses	8 hours	160

GRADUATE COURSES SPONSORED BY UCSF, continued

1990	AIDS	CE Videoconference	8 hours Nationwide VA audience	
1990	First International Course on Clinical and Laboratory Aspects of Oral AIDS	Course Organizer	2 days	20
1991	AIDS, Hepatitis and Infection Control	One all-day course	8 hours	40
1992	AIDS, Hepatitis and Infection Control	One all-day course	8 hours	115
1993	AIDS, Hepatitis and Infection Control	One all-day course	8 hours	160

INFORMAL TEACHING

1983-present	Reading oral pathology slides	Teaching Oral Surgery, Oral Medicine and AEGD; residents/fellows, dental students
1983-1990	Sjogren's Clinic	Teaching Oral Surgery, Oral Medicine, General Dental Practice and Rheumatology, reside and dental students

OTHER PROFESSIONAL TEACHING

1986-90	California College of Podiatry	Pathology	Two lectures	2	150

TEACHING HOURS PER YEAR

1989-1990	120 contact hours per year
1990-1991	120 contact hours per year
1991-1992	120 contact hours per year
1992-1993	50 contact hours per year

GRADUATE STUDENTS

As Supervisor

Date	Name	Degree	Present Position
1972-73	T.E. Daniels	M.S. Oral Biology	Professor, Oral Pathology, and Associate Dean, School of Dentistry, UCSF

GRADUATE STUDENTS, As Supervisor, continued

1974-78	G. Seymour	Ph.D. Immunology	Professor & Chair, Oral Biology and Dean, School of Dentistry University of Queensland
1975-76	M. Cullinan	M.Sc. Periodontology	Lecturer, Periodontology, University of Queensland
1974-79	H.M. Dockrell	Ph.D. Immunology	Lecturer, London School of Hygiene and Tropical Medicine, London
1976-77	L.K. Oberle	M.S. Oral Biology	Staff, Scripps Clinic, La Jolla, CA
1977-79	K. Tramontanos	M.S. Oral Biology	Private Practice
1980-81	H. Hu	M.S. Oral Biology	Private Practice
1981-82	J. Meyer	M.S. Oral Biology	Assistant Professor, Restorative Dentistry, UCSF, then entered the Church
1982-84	C. Migliorati	M.S. Oral Biology	Assistant Professor, Oral Medicine, University of Florida, Gainesville
1983-87	M. Abdel-Salam	Ph.D. Experimental Pathology	Assistant Professor, Pathology, University of Alexandria, Egypt
1983-85	B.C.C. Hwang	Ph.D. Experimental Pathology	Research Scientist, Harvard University
1987-88	M. Stern	Ph.D. Oral Biology	
1987-present	S. Miyasaki	Ph.D. Oral Biology	
1988-89	C. Miyasaki	M.S. Oral Biology	Assistant Professor, Dental Public Health & Hygiene, UCSF

On Committees (excluding students supervised)

1977-79	R. Papoian	Experimental Pathology	Ph.D. Dissertation (Chair)
1978	T. Papoian	Experimental Pathology	Ph.D. Qualifying (Chair)
1978	F. Lozada	Oral Biology	M.S.
1979	P. Magraw	Oral Biology	M.S.
1979	G. Summerhays	Oral Biology	M.S. (Chair)
1979-81	G. Leopardi	Experimental Pathology	Ph.D. Dissertation
1980-83	M. Steller	Oral Biology	M.S.
1980-83	S.B. Kipper	Experimental Pathology	Ph.D. Dissertation (Chair)
1982	R. Kao	Experimental Pathology	Ph.D. Qualifying
1983	M. Abdel-Salam	Oral Biology	M.S.
1983	B.C.C. Hwang	Oral Biology	M.S.
1986	X. Chen	Oral Biology	M.S.
1987	C. Masouredis	Oral Biology	M.S.

POSTDOCTORAL FELLOWS SUPERVISED

1978-81	P.L. Jacobsen, D.D.S., Ph.D.	Associate Professor, Oral Medicine, University of the Pacific, San Francisco
1979-81	N. Gadol, Ph.D.	Industry
1981-82	H. Nakamura, D.D.S.	Professor & Chair, Endodontics, Aichi-Gakuin University, Nagoya, Japan
1981-84	J. Meyer, D.D.S.	
1987-present	S. Miyasaki, D.D.S.	
1987-90	L. MacPhail, D.D.S., Ph.D.	Assistant Professor, Stomatology, UCSF
1988-91	J.P. Rabanus, D.D.S., Dr.Med.Dent.	Medical student, Germany

POSTDOCTORAL FELLOWS SUPERVISED, continued

1989-92	C. Dodd, B.D.S.	Assistant Professor, Stomatology, UCSF, then entered MPH program in Edinburgh
1989-90	N. Solarz, D.D.S.	Private practice
1989-91	C. Masouredis, D.D.S., MS	Pediatric dentistry resident
1991-93	F. Ramos, D.D.S., MPH	Assistant Professor, Pediatric Dentistry, UCSF
1991-present	C. Shiboski, D.D.S.	

PREDOCTORAL STUDENTS SUPERVISED

1990	I.C. Aguigui	Undergraduate (B.A., Molecular Biophysics and Biochemistry) student, Yale University, New Haven, Connecticut

RESEARCH GRANTS

As Principal Investigator

1964-76	Research Committee, Royal Dental Hospital, London: grants to support salivary gland and mineralization projects
1974-77	Medical Research Council of U.K.: approximately $20,000: "Sjogren's syndrome and a mouse model"
1979	Committee on Research, UCSF School of Dentistry: (1) "Cell types in oral mucosal disease," $2,000 (2) "Immunoconglutinins in saliva," $2,400 (with T.E. Daniels) (3) "Oral epithelial antigen," $2,120 (with L. Oberle) (4) "Cultivation of oral epithelium," $470 (5) "Immunohistochemical localization of 3.5^1 - cyclic AMP and $3^1.5^1$ - cyclic GMP in dental tissues" (with M. Yip & H. Nakamura), $3,000 (6) "Identification of the cells in the lesion of chronic inflammatory periodontal disease" (with G.C. Armitage), $4,000
1976-78	Committee on Research, UCSF Academic Senate: "The development of methods for the identification of cells in chronic inflammatory lesions," $6,000
1978-81	NIH NIDR DE-04736: "Lymphocyte function in recurrent aphthous ulceration," grant. Direct costs of $53,000 first year, $155,000 total direct costs over 3 years
1978-82	NIH-NIDR N01-DE-82415: "Immunopathogenesis of recurrent aphthous stomatitis," contract. Direct costs of $83,818 first year, $274,577 total direct costs over 3 years
1981-83	State of California: "Role of 1pr gene in murine lupus," $20,000
1983-85	UC Task Force on AIDS: "Persistent lymphadenopathy syndrome," $49,000; Co-Principal Investigator
1983-present	UC Task Force on AIDS: "AIDS Specimen Bank", $130,000 first year, $671,000 total funds (part of "UCSF AIDS Clinical Research Center")
1984-87	UC Task Force on AIDS: "Oral viral leukoplakia in association with AIDS," $38,500, $67,000, $59,000
1985-89	Upjohn Company: "Immunopathology of alopecia," $160,000
1986-87	Burroughs-Wellcome: "BW A515U and hairy leukoplakia," $24,000
1986-87	NIDR Small Grant: "Image analysis of oral epithelial lesions," $14,955
1986-87	NIH-NIDR RO1 DE08112: "Oral manifestations of AIDS - Epidemiology," $114,130 direct costs

As Principal Investigator, continued

1987-92	NIH-NIDR PO1 DE07946: "Oral manifestations of AIDS." Direct costs $552,311 first year; $2,725,558 total direct costs over 5 years
1988-92	NIH-NIDR: "Smokeless tobacco: Oral and other health effects" Virginia Ernster, Principal Investigator; John S. Greenspan, Principal Investigator of Component III. $2,792,319 2/1/88-1/31/91
1992-97	NIH-NIDR P01 DE07946: "Oral manifestations of AIDS". Direct costs $458,765 first year; $2,058,867 total direct costs over 5 years
1992-93	NIH-NIDR-R13 DE10600: "Second International Workshop - Oral Manifestations of HIV Infection." Total direct costs $63,333
1992-93	Procter and Gamble Co: "Second International Workshop on the Oral Manifestations of HIV Infection." Total direct costs $200,000
1992-93	NIH-NIDR-P01 DE07946-06A1S2: "Oral manifestations of AIDS," Office of Research on Women's Health supplement. Total direct costs $36,915
1992-97	NIH-NIDR-P01 DE07946-06AIS1: "Oral manifestations of AIDS," minority supplement. Direct costs $32,979 first year; $199,468 total direct costs
1993-96	UC Task Force on AIDS: CC93SF130: "AIDS Clinical Research Center." Direct costs $1,128,892 first year.

As Co-Investigator

1980-83	NIH-NIDR DE-05330: "Herpesvirus antibodies in patients with oral cancer" (Principal Investigator, E.J. Shillitoe). Direct costs $57,401 first year; $173,000 total direct costs over three years
1983-86	NIH-NIDR/NCI DE-CA-06097: "Multiple factors in the etiology of oral cancer" (Principal Investigator, E.J. Shillitoe). Direct costs $58,965 first year; $194,295 total direct costs over three years
1983-86	NIH 1 UO1 CA/A1 34980: "Studies of acquired immunodeficiency syndrome" (Principal Investigator, P. Volberding). Direct costs $810,913 first year; $4,082,562 total direct costs over three years
1987	UCSF, Academic Senate Committee on Research: "Multiple-user equipment" fluorescent microscope) (Principal Investigator, S. Fisher) $20,001
1987-88	UCSF, School of Dentistry Research Committee #RR5305: "Multiple-user equipment (fluorescent microscope) (Principal Investigator, E. Khoury) Total direct award $15,160
1987-88	NIH Multi-User Equipment grant: "Transmission electron microscope and accessories" (Co-Investigator with C. Damsky and R. Kramer) Total direct award $258,000
1987-92	NIH-NIDR T32-DE07172: "A dental clinical epidemiology program" (Co-Principal Investigators, S.P. Hulley and S.J. Wycoff) J.S. Greenspan, Co-Investigator, 5% effort. Direct costs $69,903 first year; $817,179 total direct costs over 5 years
1987-92	NIH-NCI Program Project grant PO1-AI24286: "Laboratory and clinical studies of AIDS" (Paul Volberding, Principal Investigator) J.S. Greenspan, Investigator, 5% effort "AIDS Specimen Bank." $15,000 direct costs per year
1987-95	NIH N01-AI-82515: "San Francisco Men's Health Study" (Warren Winkelstein, Principal Investigator) J.S. Greenspan, Investigator, 10% effort.
1988-94	NIH-NIAID 1P30-AI27763: "San Francisco Center for AIDS Research (SFCFAR)" (Paul Volberding, Principal Investigator) J.S. Greenspan, P.I., "Core 2" component. $111,150 first year direct costs
1993-97	NIH-NIAID 1U01-AI34989: "Bay Area Women's HIV Study" (Ruth Greenblatt, Principal Investigator) J. S. Greenspan, PI Core 2; Co-Investigator, Cores 1 and 3. $168,988 first year direct costs.

Educational Improvement Grant

1982-83	Vice Chancellor for Academic Affairs, UCSF UCSF-UCLA Oral Biology Intercampus Program - $5,000

PUBLICATIONS

ORIGINAL ARTICLES

1964

J.S. Greenspan, M.R. Melamed and A.E.G. Pearse. Early histochemical changes in irradiated salivary glands and lymph nodes of the rat. J. Pathol. Bacteriol. 88:439-453.

1966

J.S. Greenspan and H.J.J. Blackwood. Histochemical studies of chondrocyte function in the cartilage of the mandibular condyle of the rat. J. Anat. 100:615-625.

J. S. Greenspan and H.J.J. Blackwood. Histochemical studies of chondrocyte function in the cartilage of the mandibular condyle of the rat. Proc. 3rd European Symposium on Calcified Tissues, Berlin, Springer-Verlag, pp. 40-45.

1974

J.S. Greenspan, T.E. Daniels, N. Talal and R.A. Sylvester. The histopathology of Sjogren's syndrome in labial salivary gland biopsies. Oral Surg. 37:217- 229.

K.F. Tabbara, H.F. Ostler, T.E. Daniels, J.S. Greenspan and N. Talal. Sjogren's syndrome, a correlation between ocular findings and labial salivary gland histology. Trans. Am. Acad. Ophthalmol. Otol. 78:467-478.

J.S. Greenspan, J.A. Gutman, N. Talal, I.L. Weissman and S. Sugai. Thymus-antigen and immunoglobulin-positive cells in lymph nodes, thymus, and malignant lymphomas of NZB/W mice. Clin. Immunol. Immunopathol. 3:32-51.

J.S. Greenspan, G.A. Gutman, N. Talal, and I.L. Weissman. Thymus-antigen and immunoglobulin-positive cells in tissue infiltrate of NZB-NZW mice. Clin. Immunol. Immunopathol. 3:16-31.

B.A. Gusterson and J.S. Greenspan. Multiple polypoid conditions of the oral mucosa. Br. J. Oral Surg. 12:91-95.

N. Talal, R.A. Sylvester, T.E. Daniels and J.S. Greenspan. T and B lymphocytes in peripheral blood and tissue lesions in Sjogren's syndrome. J. Clin. Invest. 53:180-189.

1975

T.E. Daniels, S. Silverman, J.P. Michalski, J.S. Greenspan, R.A. Sylvester and N. Talal. The oral component of Sjogren's syndrome. Oral Surg. 37:217-229.

S. Silverman, J.S. Greenspan and T. Christie. Junctional nevus of the oral mucosa. Oral Surg. 39:259-267.

R.J. Nicholson, F. Casanova, J.S. Greenspan and M.M. Stark. Comparison of tissue response between a synthetic gutta-percha and a natural gutta-percha endodontic filler. Oral Surg. 39:802-805.

1976

P.D. McAndrew and J.S. Greenspan. Lipoma of lip showing cartilage formation. Br. Dent. J. 140:239-240.

ORIGINAL ARTICLES, continued

G.J. Seymour, H.M. Dockrell and J.S. Greenspan. Fixation for immunofluorescence and enzyme histochemistry on serial sections. J. Histochem. Cytochem. 24:1112-1115.

D. Kempler, M. Stark, R.L. Leung and J.S. Greenspan. The enamel-composite interface related to cavo-surface configuration, abrasion, thermal cycling and application of bonding agents. Operative Dent. 1:137-145.

1978

J. Zulman, J. Michalski, C. McCombs, J.S. Greenspan and N. Talal. Levamisole maintains cyclophosphamide-induced remission in murine lupus erythematosus. Clin. Exp. Immunol. 31:321-327.

C.M. Yeoman, J.S. Greenspan and S.M. Harding. Recurrent oral ulceration. A double-blind comparison of treatment with betamethasone valerate aerosol and placebo. Br. Dent. J. 144:83-84.

J.S. Greenspan, C.M. Yeoman and S.M. Harding. Oral lichen planus. A double- blind comparison of treatment with betamethasone valerate aerosol and pellets. Br. Dent. J. 144:83-84.

R. Siegel, K.H. Chen, J.M. Aguilar and J.S. Greenspan. Biochemical and immunochemical study of lysyl oxidase in experimental hepatic fibrosis in the rat. Poc. Natl. Acad. Sci. USA 75:2945-2949.

H.M. Dockrell, G.J. Seymour, J.H.L. Playfair and J.S. Greenspan. Cytochemical identification of T and B cells in situ in mouse lymphoid tissue and lymph nodes from the rat, gerbil and cat. Ann. Immunol. (Inst. Pasteur) 129C:617- 633.

J. Roubinian, N. Talal, J.S. Greenspan, J. Goodman and P. Siiteri. The effects of castration and sex hormone treatment on survival, anti-nucleic acid antibodies and glomerulonephritis. J. Exp. Med. 147:1568-1583.

G.J. Seymour, H.M. Dockrell and J.S. Greenspan. Enzyme differentiation of lymphocyte subpopulations in sections of human lymph nodes, tonsils, and periodontal disease. Clin. Exp. Immunol. 32:169-178.

1979

G.J. Seymour and J.S. Greenspan. The phenotypic characterization of lymphocyte subpopulations in established human periodontal disease. J. Periodont. Res. 14:39-46.

B.R. Zetter, T.E. Daniels, C. Quadra-White and J.S. Greenspan. LETS protein in normal and pathological human oral epithelium. J. Dent. Res. 58:484-488.

L.K. Oberle, K. Fukuyama, T.E. Daniels and J.S. Greenspan. Immunohistochemistry of keratin in human oral epithelium. Arch. Oral Biol. 24:321-326.

J.R. Roubinian, N. Talal, J.S. Greenspan and J.R. Goodman. Delayed androgen treatment prolongs survival in murine lupus. J. Clin. Invest. 63:902-911.

H.M. Dockrell and J.S. Greenspan. Histochemical identification of T-cells in oral lichen planus. Oral Surg. 48:42-46.

W.E. Seaman, T.D. Gindhart, J.S. Greenspan, M.A. Blackman and N. Talal. Natural killer cells and bone: studies in estrogen treated mice and in congenitally osteopetrotic (mi/mi) mice. J. Immunol. 122:2541-2547.

J. Roubinian, N. Talal, J.S. Greenspan, J.R. Goodman and V. Nussensweig. Danazol's failure to suppress autoimmunity in NZB/NZW F_1 mice. Arthritis Rheum. 22:1399-1402.

1980

W.E. Seaman, M. Blackman, J.S. Greenspan and N. Talal. Effect of ^{89}Sr on immunity and autoimmunity in NZB/NZW mice. J. Immunol. 124:812-818.

ORIGINAL ARTICLES, continued

1981

R.H. Jensen, J.S. Greenspan, D. Moore, N. Talal and J.R. Roubinian. Quantitative immunofluorescence microscopy of renal glomeruli from mice exhibiting murine lupus erythematosus. J. Immunol. Methods 42:343-353.

J.S. Greenspan, N. Gadol, N. Talal and J.A. Olson. Antibody-dependent cellular cytotoxicity in recurrent aphthous ulceration. Clin. Exp. Immunol. 44:603-610.

E.G. Engelman, G. Sonnenfeld, M. Dauphinee, J.S. Greenspan, N. Talal, H.O. McDevitt and T.C. Merigan. Treatment of NZB/NZW F_1 hybrid mice with mycobacterium bovis strain BCG or type II interferon preparations accelerates autoimmunity. Arthritis Rheum. 24:1396-1402.

1982

E.J. Shillitoe, D. Greenspan, J.S. Greenspan, L.S. Hansen and S. Silverman Jr. Neutralizing antibody to herpes simplex virus type 1 in patients with oral cancer. Cancer 49:2315-2320.

E.J. Shillitoe, T.E. Daniels, J.P. Whitcher, C.V. Strand, N. Talal and J.S. Greenspan. Antibody to cytomegalovirus in patients with Sjogren's syndrome, as determined by ELISA. Arthritis Rheum. 25:331-336.

J.A. Olson, I. Feinberg, S. Silverman Jr., D. Abrams and J.S. Greenspan. Serum vitamin B_{12}, folate and iron levels in recurrent aphthous ulceration. Oral Surg. 54:517-520.

J.L. Ziegler, W.L. Drew, R.C. Miner, L. Mintz, E. Rosenbaum, J. Gershow, E.H. Lennette, J.S. Greenspan, E.J. Shillitoe, J. Beckstead, C. Cassavant and K. Yamamoto. An outbreak of Burkitt's-like lymphoma in homosexual men. Lancet 2:631-633.

1983

E.J. Shillitoe, D. Greenspan, J.S. Greenspan and S. Silverman Jr. Immunoglobulin class of antibody to herpes simplex virus in patients with oral cancer. Cancer 51:65-71.

P.L. Jacobsen and J.S. Greenspan. The effect of isoprinosine on the PHA response of monocyte-depleted and non-depleted peripheral blood mononuclear cells. J. Immunopharmacol. 4:355-365.

W.E. Seaman, D. Wofsy, J.S. Greenspan and J.A. Ledbetter. Treatment of autoimmune MRL/1pr mice with monoclonal antibody to thy-1.2: a single injection has sustained effects on lymphoproliferation and renal disease. J. Immunol. 130(3):1713-1718.

G.C. Armitage, T.A. Banks, E. Newbrun, J.S. Greenspan, C.I. Hoover and J.H. Anderson. Immunologic observations in Rhesus monkeys with Shigella-associated periodontal disease. J. Periodont. Res. 18:139-148.

C. Hoover and J.S. Greenspan. Immunochemical comparison of various Streptococcus sanguis cell wall antigens in relation to recurrent aphthous ulceration. Arch. Oral Biol. 28:917-922.

G. Armitage, T. Banks, E. Newbrun, J.S. Greenspan, C. Hoover, J. Anderson. Immunologic observations in macaques with Shigella-associated periodontal disease. J. Perio Res. 18:139-148.

C. Hoover, J.S. Greenspan. Immunochemical comparison of cell-wall antigens of various streptococci, including strain $2A_2 + {}_3$ hot from recurrent oral aphthous ulceration in man. Arch. Oral Bio. (10):917-922.

M.C.M. Yip, H. Nakamura and J.S. Greenspan. Immunohistochemical localization of cellular cyclic AMP in normal human pulp. J. Endodontics 9:523-526.

1984

E.J. Shillitoe, D. Greenspan, J.S. Greenspan and S. Silverman. Antibody to early and late antigens of Herpes simplex virus type 1 in patients with oral cancer. Cancer 54:266-273.

E. Shillitoe, C.I. Hoover, S. Fisher, M. Abdel-Salam and J.S. Greenspan. Characterization of oral streptococci that activate the dietary glycoside rutin to a mutagen. JNCI 73(3):673-678.

ORIGINAL ARTICLES, continued

D. Greenspan, J.S. Greenspan, M. Conant, V. Petersen, S. Silverman and Y. de Souza. Oral "hairy" leucoplakia in male homosexuals: evidence of association with both papillomavirus and a herpes-group virus. Lancet 2:831-834.

J.S. Greenspan and D. Greenspan. Viruses and oral "hairy leukoplakia." (Letter to the Editor) Lancet 2:1279.

1985

J.R. Meyer, C.A. Migliorati, T.E. Daniels and J.S. Greenspan. Localization of basement membrane components in mucous membrane pemphigoid. J. Invest. Dermatol. 80:105-107.

J.R. Meyer, S. Silverman Jr., T.E. Daniels, R.H. Kramer and J.S. Greenspan. Distribution of fibronectin and laminin in oral leukoplakia and carcinoma. J. Oral Pathol. 14:247-255.

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JK 89-0117, 15x5, t: Ziegler, J.: Burkitt's

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

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SCHOOL OF DENTISTRY
Department of Oral Medicine
and Hospital Dentistry

SAN FRANCISCO, CALIFORNIA [redacted] 94143

March 1, 1982

John Zeigler, M.D.

JG did pathology for KS grp?

Dear John:

Re: Burkitt's study

As you will see from the enclosed report, there are few T cells in the two lymphomas ([redacted] and [redacted]) in which we got adequate results. However, all of the T cells are of the suppressor/cytotoxic phenotype.

The questions that come to mind are:

1. Are the T cells a non-neoplastic population which is attempting to suppress (and/or destroy) the transformed B cells?
2. Alternatively (unlikely) are they a subset of noeplastic lymphocytes which acquire the T_4 and T_8 antigens during transformation?
3. Are the $T_{11} + T_8 + T_4 -$ cells functionally suppressor, or cytotoxic, or both?

The results are unexpected and I find them exciting. The questions they raise can only be answered by functional studies on cells isolated from specimens obtained from future cases, if any.

Look forward to seeing your draft.

Sincerely,

John S. Greenspan
B.Sc., B.D.S., Ph.D., M.R.C.Path.
Professor and Chairman,
Oral Biology

cc: Dr. E.J. Shillitoe
Dr. E. Lennette
Dr. L. Drew
Dr. J. Beckstead

JSG:ag

University of California - San Francisco

School of Dentistry 236

Division of Oral Biology
Department of Oral Medicine and Hospital Dentistry

REPORT - SURFACE ANTIGEN FOR CELL TYPES

Patient: [redacted]

Specimen submitted by: Dr. J. Beckstead/J. Greenspan

Age:

Sex: Male

Address:

Biopsy date:

Location of biopsy: Not specified

Specimen #: R82-005

Pathology accession #:

Processing date: 2/24/82

CLINICAL IMPRESSION: Burkitt's

GROSS DESCRIPTION: Piece of frozen tissue - stored in liquid nitrogen

[redacted] [redacted]

MICROSCOPIC DESCRIPTION:

Staining and enumeration of cell surface antigen positive cells using Coulter-clone^{TM} monoclonal antibodies and the ABC (avidin-biotin-peroxidase complex) technique reveals:

% + ve cells	T_{11}	T_8	T_4	B_1	I_2
Normal node (control) T areas	56	23	36	over 50	over 70
Normal node (control) B areas	13	6	9	over 80	over 80
This case	8	7	0	over 87	over 80

SUMMARY: B cell lymphoma with approx 8% T cells, all of which carry the suppressor/cytotoxic phenotype.

John S. Greenspan BDS, PhD
February 26, 1982

School of Dentistry

Division of Oral Biology

Department of Oral Medicine and Hospital Dentistry

REPORT - SURFACE ANTIGEN FOR CELL TYPES

Patient: [redacted]

Specimen submitted by: Dr. D. Greenspan

Age: ______ Sex: ______

Address: ______

Biopsy date: ______

Location of biopsy: Lymph node

Specimen #: R82-002

Pathology accession #: ______

Processing date: 2/24/82.

CLINICAL IMPRESSION: Burkitt's

GROSS DESCRIPTION: A small fragment of frozen tissue - stored in liquid nitrogen

MICROSCOPIC DESCRIPTION:
Staining and enumeration of cell surface antigen positive cells using Coulter-clone™ monoclonal antibodies and the ABC (avidin-biotin-peroxidase complex) technique reveals:

% + ve cells	T_{11}	T_8	T_4	B_1	I_2
Normal node (control) T areas	56	23	36	over 50	over 70
Normal node (control) B areas	13	6	9	over 80	over 80
This case	15	15	0	over 80	over 80

SUMMARY: B cell lymphoma with 15% T cells all of which carry the suppressor/cytotoxi phenotype.

John S. Greenspan BDS,PhD
February 26, 1982

[redacted]

pathology work o AIDS

Department of Oral Medicine
and Hospital Dentistry

APPENDIX D

604 HSW-Research Lab

CN 92-0123
Bx 11-92
f. Carmen Reports &
Division Reports, 5/82-

TO: Dr. John Greenspan

FROM: Carmen White

DATE: 4-14-83

RE: Current Projects

Sjogren's Syndrome: I have completed the statistical analyses and photography on the cases you presented at the AADR meeting. I have also talked with Dr. Daniels regarding what remains to be done for the paper(i.e., peripheral blood studies, Leu 7 staining and B cell identifcation with heavy and light chain specific antisera) and we have planned on doing these within the next 2-3 weeks. I gave him a list of the Sjogren's specimens we have available so that he may add any he thinks would be interesting.

✓ AID-LAN: Since the last meeting I attended with you and Drs. Beckstead and Abrams, we have sent sections of lymph nodes, both control and patients, to Dick Miner for virus studies the results of which you already have. Since initially he did his staining on touch preps of these patients, you told me to send him sections on all the cases so that the study could be consistent. We have cut 10 more specimens for him to react; the remaining 8 cases will be cut within 2 weeks. This will complete the virus study on sections of the 21 patients which I have counted. After reviewing all the cases with you I feel that the counting was done correctly and that our initial results remain unchanged as regards T4:T8 ratios. (see attached)

Cal-MoAb: I have completed the preliminary experiments with this reagent, both on paraffin and frozen sections. The immunoperoxidase staining on frozen section of a carcinoma case, revealed positive staining epithelial cells at the site of invasion but not of areas of atypia. When the paraffin sections of this same case were reacted, we saw similar staining patterns, only somewhat weaker. The staining with this antibody was in general inconsistent and did not seem to detect early premalignant cells. Dr. Shillitoe reviewed the slides with me and I believe he is preparing a report.

Dr. Devron Char: I rean two assays using Mo Ab's to T and B cells on cultures of melanoma tumors containing lymphocytes. The first run showed a predominance of T cells with a high number of Leu 7 positive cells and very few B cells. The second run did not produce any results because there were just not enough cells to count. They have not contacted me for any further assistance.

✓ Dr. Amman: We ran a second Indirect immunofluorescence experiment on the Proffett child's speel using patient, donor and control sera with an FITC-goat anti human IgG and IgM. Results showed no specific reaction for antigen with only IgG and IgM containing cells showing positive staining even with the PBS control. There is still a sample of lung tissue from this child you can let me know if you would like this reacted also.

✓**Dr. Rutter:** We cut sections from a total of 7 Kaposi's patients and although the first 3 specimens gave sufficient amount of DNA for the virus studies they are performing, the remaining specimens were inadequate. They would like to go back to cutting off a piece of from the main specimen block and will contact me on this later.

Peripheral Blood Mononuclear Cell Mo Ab Staining: I have completed the experiment comparing Indirect Immunofluorescent staining to the ABC- Indirect Immunoperoxidase method on 5 normal donors. All preparations were reacted and counted on the same day. See attached for results. I am also writing up this method for a possible publication. I hope to have a very rough draft for you to look over within the next 4 weeks.

Trachoma Study: We have run into some problems with the quantitative analysis of the material we have reacted thus far. We may have to just report our findings qualitatively. We have done various experiments that establish the instability of the material when frozen or stored, and what is the optimal manner of preparation. We are now starting on the animal work which will probably take us a month to finish.

AIDS-LAN: Results from our meeting 4-13-83,

I. In terms of morphology we observed three patterns:

a. marked enlargement of germinal centers and paracortex
b. also , enhancement of crescent within germinal centers deep to mantle zone, and
c. loss of architecture with depletion of T8 cells and increase of T4 cells

II. In terms of monoclonal antibody cell surface antigen we also observed three different patterns:

a. overlaps with "a" and "b" above where the 4:8 is approximately 1.25 and up in the paracortex;
b. overlaps with "a" and "b" above where the 4:8 is 1.25 and below with areas of T4 positive cells not yet depleted; also areas of 4 positive ? debris or dying cells, ~~and~~ or virus histiocyte phagocyte of T4
c. same as "c" in I (Foster) = T8 depletion, (almost absent) and marked T4 dominance.

4/19/83 JG/[illegible]/JBeck[illegible]. Hypothesis T4+ subset is infected? ? what cell virus in

? normal virus histiocytes +ve ? stain ? marker T4 subset + c virus

PBMC's – MoAb

Sample #	T_{11} IIF	T_{11} IP	T_4 IIF	T_4 IP	T_8 IIF	T_8 IP
1	68	68.3	44.3	54.2	24	24.5
2	64.2	74	45.5	51	26	26
3	65.3	75	42	49	20	24
4	66.6	66.5	49	44.23	23	22.5
$\bar{X}$	67.28	70.95	46.45	49.61	23.25	24.25
SD	1.00	4.18	3.43	4.18	2.5	1.

T_4;T_8

	IIF	IP
1	2.05	2.21
2	1.76	1.96
3	2.1	2.04
4	2.13	1.96
$\bar{X}$	2.01	2.04
SD	0.17	0.12

CN92-0123, Bx 2-92
AIDS Tissue Committee

July 1, 1983

To: Jay Levy, M.D.
Coordinator, AIDS P.I. Group, UCSF

From: John S. Greenspan, B.D.S., Ph.D.

Subject: AIDS collaborations

1. LNS immunopathology study
   - Abrams, Beckstead, Drew, Miner

2. KS histogenesis study
   - Kramer, Conant

3. HBV study
   - Altmann, Zeimer, Rutter and Schmid

4. Tissue Bank services (cutting cryostat section etc., sending sera)
   - Drew, Levy, Ammann, Vyas, Lennette, Roulette-Smith, Modlin.

cc: Dr. Zeigler
Dr. Conant
Dr. Volberding

JSG:ag

University of California San Francisco
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Michela Reichman, Assistant Chancellor-Communications
Source: Corinna Kaarlela (415/666-2557)

EMBARGOED FOR RELEASE:
11:45 AM, SUNDAY, DECEMBER 9, 1984

UCSF RESEARCH TEAM IDENTIFIES EPSTEIN-BARR VIRUS IN ORAL LESION LINKED TO AIDS

IRVINE - Researchers at the University of California, San Francisco trying to unravel the mystery of AIDS have for the first time identified the specific type of herpes virus found in the unusual lesion, hairy leukoplakia, which has been found in the mouth of male homosexuals and may provide an early clinical link to later development of AIDS.

It is the Epstein-Barr virus, one of four in the human herpes virus group, which also includes herpes simplex, zoster varicella, and cytomegalovirus.

Previous research by the UCSF team had determined that the hairy leukoplakia (HL) lesion is distinctive because it contains more than one virus--both papillomavirus and one from the herpes group. Both virus components are cancer-related.

According to John Greenspan, BDS,PhD, UC-San Francisco oral biologist/pathologist who is principal investgator for the laboratory study, the new finding is important because it presents new understanding of the biology of the Epstein-Barr virus and AIDS, of the sequence of events leading to development of the HL lesion, and of the role of multiple viruses in cancer of the mouth and other mucous membranes.

Greenspan presented the study results today at the "International Conference on AIDS-Associated Syndromes" sponsored by the UC-Irvine Division of Basic and Clinical Immunology. Study co-investigators are UCSF faculty members Deborah Greenspan, BDS; Marcus Conant, MD; Donald Abrams, MD; and Sol Silverman, Jr., DDS; UCSF researchers Vibeke Petersen and Yvonne de Souza; and Evelyne Lennette of Virolab of Emeryville.

The UCSF study involved 77 males who had the HL lesion on the tongue, seven of whom were diagnosed as having AIDS. Using an electron microscope, the UCSF team identified the Epstein-Barr virus in tissue samples from the lesion in 14

(more)

Messengered and Mailed: 12/7/84

patients without AIDS. This is the first time medical researchers have reported seeing the virus in a human biopsy.

"The mystery of Epstein-Barr has been where does it live. Because we had never seen it in tissue, we didn't know what kind of cells helped it thrive. Now that we have confirmed its presence in the HL lesion in the mouth, we know it is compatible with epithelial cells, and this gives us more information about the virus and developing an effective treatment," Greenspan said.

He also noted that current study findings support earlier UCSF work indicating a clinical link between the HL lesion and later development of AIDS in some patients.

Epstein-Barr virus is associated with infectious mononucleosis, an acute feverish illness characterized by swollen lymph nodes; Burkitt's lymphoma, a cancer of the lymphatic system common in Africa; and nasopharyngeal carcinoma, a cancer of the upper pharynx common in China.

The HL lesion is a new type of oral lesion first reported in the scientific literature in October, 1984 by a UCSF research team headed by Deborah Greenspan, BDS. Its name is derived from the lesion's corrugated surface which is comprised of numerous minute projections so fine they resemble hairs.

#######

Media interested in interviewing Dr. John Greenspan on Saturday or Sunday, December 8-9, can reach him at the Irvine Marriott Hotel (714/851-1100) care of the International Conference on AIDS-Associated Syndromes.

CN 92-0125, Bx 7-92, T: BW A515U CHK 1986

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

CONSENT TO BE A RESEARCH SUBJECT

Dr. Deborah Greenspan, Dr. John Greenspan and Dr. Marcus Conant are doing a research study of an experimental form of medication intended to be used for the treatment of Hairy Leukoplakia. Hairy Leukoplakia is the disease that is causing the white changes in my mouth. There is no known treatment at this time. Because I have Hairy Leukoplakia, I have been invited to participate in this study which will compare the capsule BW A515U with a placebo (inactive substance).

If I agree to participate, the following will happen:

1) A biopsy will be taken from the tongue on the first visit to confirm the presence of hairy leukoplakia and a biopsy may be taken on one or two subsequent visits to determine the effectiveness of the medication.
2) A complete physical examination will be performed.
3) Blood samples (about 1 1/2 ounces) will be taken from my arm veins on two occasions.
4) I will be assigned to receive BW A515U or placebo (inactive substance) on a randomized basis. This means I have a 50/50 chance of receiving either treatment.
5) I will be treated for two weeks. A glass of water (200ml) should be consumed while taking the medication and an additional glass one hour after taking the medication.

There may be some risks or discomfort associated with participation.

1) A biopsy may cause some soreness for up to two days, occasional swelling and rarely a little bleeding.
2) The known possible side effects of BW A515U are mild headaches.
3) Through randomization, I may receive treatment that is less effective or has more side effects.
4) Drawing blood can cause temporary discomfort, a bruise, or rarely, and infection.
5) If I am injured as a result of being in this study, treatment will be available. The costs of such treatment may be covered by the University, depending on a number of factors. The University does not normally provide any other form of compensation for injury. For further information about this I may call (415) 666-1814.
6) Confidentiality will be maintained as much as possible, but the drug company and the Federal Drug Administration may have access to the records to check on the progress of the study.

There will be no direct benefit to me from this participation, but it is hoped that the results of the study will show if BW A515U is effective as a treatment for hairy leukoplakia.

If I decide not to be in the study, I may choose either to receive no treatment, or to participate in experimental therapies other than this one.

I have talked with Dr. Greenspan about this study. If I have any questions or if I am concerned about anything after the study, I may contact her at (415) 476-2045 or 476-2046.

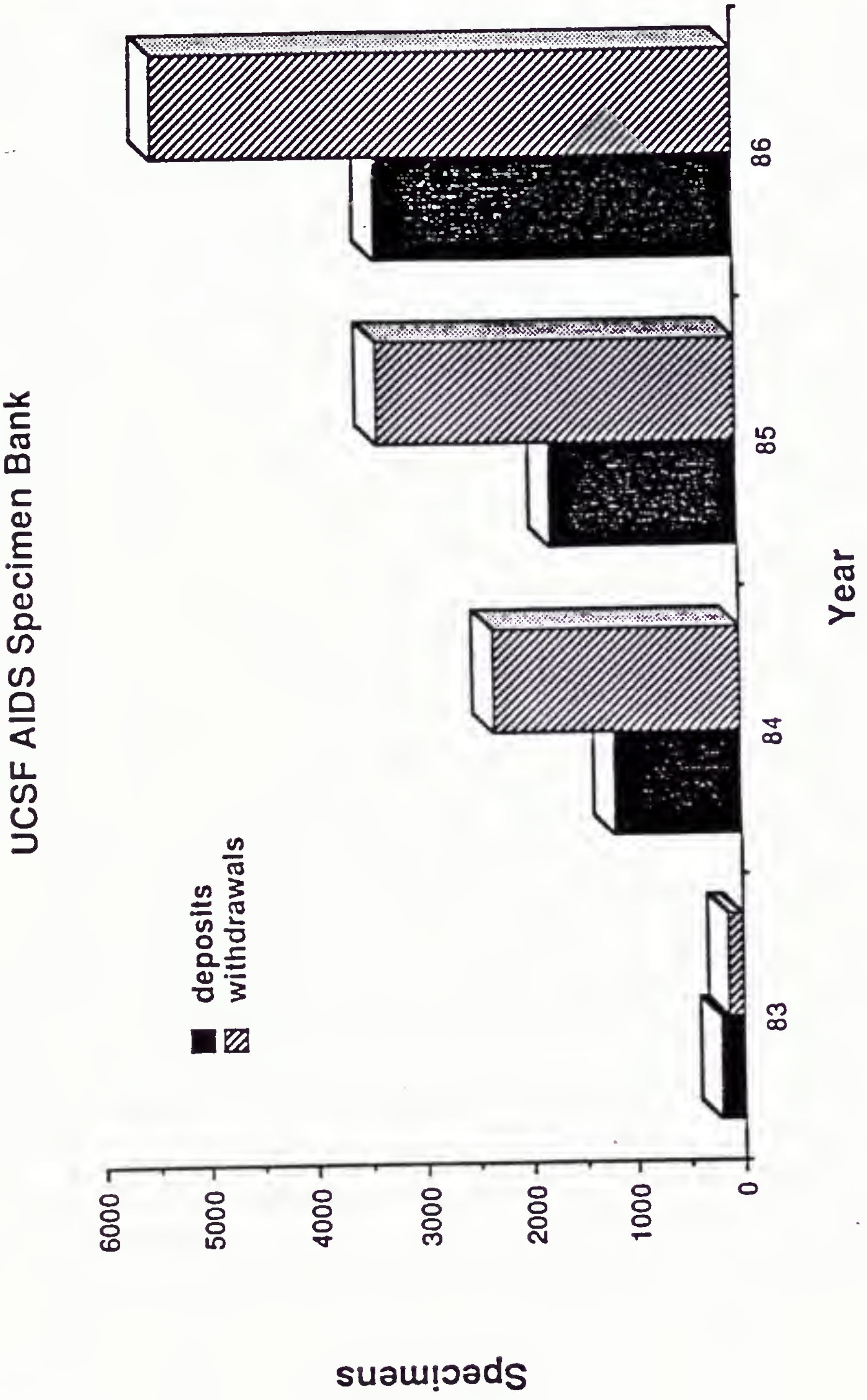
I have been offered a copy of the consent form and the Experimental Subject's Bill of Rights to keep.

PARTICIPATION IN RESEARCH IS VOLUNTARY. I may refuse to enter the study or may withdraw at any time without jeopardy to my treatment at this medical center or in this clinic.

____
Subject's Signature

____
Date

IG/Mod.4.100986



UCSF AIDS Specimen Bank

Reproduction from Special Collections, The Library, University of California, San Francisco

UCSF NEWSBREAK Vol. 2 #14 7/25-8/21/87 P.1

$2.7 Million Grant to Help Support Major Oral AIDS Center

A team of researchers from UCSF has received a $2.7 million grant from the National Institutes of Dental Research (NIDR) to study oral manifestations of AIDS—paving the way for an Oral AIDS Center in the School of Dentistry which will serve as a major regional and national resource.

Mikkel Aaland

Barbara Gerbert

The new Center will focus on research, clinical care of oral AIDS, and education about the disease. The five-year grant will fund the research component of the Center, while the UCSF School of Dentistry and a grant from the American Fund for Dental Health will support clinical care and education.

UCSF oral biologist/pathologist John Greenspan, BDS, PhD, who is program director for the NIDR research project, will serve as director of the Center. Deborah Greenspan, BDS, associate clinical professor, oral medicine, will direct the clinical unit and Barbara Gerbert, PhD, will head the education unit. The Center is expected to be in full operation by September.

Research will be a continuation of ongoing work that already has established the UCSF team as a national leader in oral problems related to AIDS.

David Powers

Deborah and John Greenspan

Tan binder "AIDS Ctr. Clinical [illegible]"

SAN FRANCISCO: SCHOOL OF DENTISTRY
OFFICE OF THE DEAN

June 27, 1988 APPENDIX J

Faculty, Students and Staff

RE: Infection Control Protocols and Questionnaire

Enclosed is an additional set of protocols I have approved for dissemination to the faculty, students and staff. This set includes protocols on clinical, laboratory, and sterilization and dispensary procedures. These protocols have been indexed and added to the package of protocols that were distributed on February 23, 1988.

With the addition of these protocols, a comprehensive infection control program for the School of Dentistry is ready to be implemented. It also means the work of the Task Force on Infection Control is drawing to a close. The School of Dentistry deeply appreciates the dedication of Dr. Deborah Greenspan and the faculty, students and staff who served on the Task Force and whose time and effort was committed to the design and development of an infection control program that will encourage the continued good health of every member of the dental community at UCSF.

Through my office, the Advisory Committee on Infection Control will continue to issue statements on implementation and compliance as they are formalized. I would ask that you take this time to acquaint yourself with the most recent protocols and to initiate their use, where applicable, in anticipation of further developments in our implementation strategy.

At the rear of the packet, you will also find an infection control questionnaire that is to be completed and returned to the Dean's Office, School of Dentistry. This is the first step in fulfilling OSHA requirements concerning documentation of the effort to educate and train employees in infection control techniques. In the upcoming months, all employees of the School of Dentistry will be classified according to their risk of exposure to infectious disease, and formal, in-house training sessions will be arranged. Your cooperation in completing the questionnaire based on the information available in the protocols is appreciated.

John C. Greene

John C. Greene, D.M.D.
Dean

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